*BY ORDER OF THE*
*SECRETARY OF THE AIR FORCE*

*AIR FORCE INSTRUCTION 11-2E3/TC-18,*
*VOLUME 3*

*1 OCTOBER 1998*

*Flying Operations*

*E-3/TC-18--OPERATIONS PROCEDURES*

**COMPLIANCE WITH THIS PUBLICATION IS MANDATORY**

---

**NOTICE:** This publication is available digitally on the SAF/AAD WWW site at: http://afpubs.hq.af.mil. If you lack access, contact your Publishing Distribution Office (PDO).

---

OPR: HQ ACC/DISA
(Maj William S. Tully, Jr.)
Supersedes MCI 11-E3V3, 17 January 1997

Certified by: HQ USAF/XOO
(Brig Gen Michael S. Kudlacz)
Pages: 56
Distribution: F

---

This instruction implements policy guidance in AFPD 11-2, *Aircraft Rules and Procedures*; AFPD 11-4, *Aviation Service*; and AFI 11-202V3, *General Flight Rules.* It provides the basis for worldwide employment of the E-3 Airborne Warning and Control System. This publication does not apply to the Air National Guard. All aircrews will follow this volume which prescribes standard operating procedures and restrictions. Complementary references were included. Commanders must ensure that individuals are fully qualified according to all applicable directives prior to being utilized as mission ready/mission capable crewmembers. Commanders will provide aircrews with sufficient planning factors to ensure mission accomplishment. Flying safety will not be compromised. Issue this volume to E-3 aircrew members in accordance with local procedures. MAJCOMs/DRUs/FOAs are to forward proposed MAJCOM/DRU/FOA-level supplements to this volume to HQ AFFSA/XOF, through HQ ACC/DISA, for approval prior to publication IAW AFPD 11-2. Copies of MAJCOM/DRU/FOA-level supplements, after approved and published, will be provided by the issuing MAJCOM/DRU/FOA to HQ AFFSA/XOF, HQ ACC/DISA, and the user MAJCOM/DRU/FOA offices of primary responsibility. Field units below MAJCOM/DRU/FOA level will forward copies of their supplements to this publication to their parent MAJCOM/DRU/FOA office of primary responsibility for post publication review. **NOTE:** The terms Direct Reporting Unit (DRU) and Field Operating Agency (FOA) as used in this paragraph refer only to those units that report directly to HQ USAF. Keep supplements current by complying with AFI 33-360V1, *Publications Management Program*. See paragraph **1.2.** of this volume for procedures on how and where to submit recommended changes to this publication.

This instruction requires the collection or maintenance of information protected by the Privacy Act of 1974. The authority to collect and maintain the records prescribed in this instruction are 37 USC 301a, Incentive Pay; Public Law 92-204 (Appropriations Act for 1973), Section 715; Public Law 93-570 (Appropriations Act for 1974); Public Law 93-294 (Aviation Career Incentive Act of 1974); DoD Directive 7730.57 (Aviation Career Incentive Act of 1974 and Required Annual Report, February 5, 1976, with Changes 1 and 2); and Executive Order 9497. System of records notice F011 AF XO A, Air Force Operations Resource Management System (AFORMS) applies. The Paperwork Reduction Act of 1974 as

amended in 1996 affects this instruction. Also, the Air Force Forms Management Program IAW AFI 37-160V8, *The Air Force Publications and Forms Management Program--Developing and Processing Forms*, affects this instruction.

This instruction contains references to the following field (subordinate level) publications and forms which, until converted to departmental level publications and forms, may be obtained from the respective MAJCOM publications office:

**Publication:** ACCI 21-101, *Objective Wing Aircraft Maintenance* (superseded ACCI 21-166)

# Chapter 1

# GENERAL

**1.1. Waivers.** Route waivers through HQ ACC/DIS, HQ PACAF/DOY, or HQ AFRC/DOT as appropriate (HQ AFRC/DOT send info copy to HQ ACC/DISA).

**1.2. Recommended Changes.** Send comments and suggested improvements to this volume on AF Form 847, **Recommendation for Change of Publication**, through channels, to HQ ACC/DISA, 129 Andrews St, Suite 150, Langley AFB VA 23665-2767. HQ USAF/XO will approve all changes to this instruction, except as specified herein, unless an aircraft emergency or operational necessity dictates exception.

**1.3. Abbreviations, Acronyms, and Terms.** See **Attachment 1**.

## Chapter 2

## MISSION PLANNING

**2.1. Responsibilities.** The responsibility for mission planning rests with the aircraft commander (AC). Preparation for mission tasking/execution is the responsibility of the mission crew commander (MCC) with support from the operations functions of the unit. Under normal circumstances a crew scheduled for a mission will complete their own planning and briefing under the supervision of the AC and MCC on the working day prior to the flight. AFRC aircrews will use local policy which may utilize the AFRC mission planning cell. During circumstances that require an accelerated response, the crew scheduled to perform the mission may be placed in crew rest and a group of qualified individuals will be designated to perform mission planning and/or briefings. Units will develop specific procedures to ensure all aircrew members are thoroughly familiar with and prepared for each flight.

**2.2. Forms and Logs.** Specific flight plans, logs, and mission forms will be developed/specified by the appropriate group commander. Existing AF and MAJCOM forms should be used to the maximum extent possible.

**2.3. Navigational Charts.** Annotate navigational charts to reflect:

2.3.1. Special use airspace within the altitude structure and within 50 nautical miles of the planned route of flight. The navigator need not annotate special use airspace along those portions of the route conducted on established airways referenced by Flight Information Publication (FLIP) enroute charts. On airways, the navigator may correlate special use airspace directly from the FLIP charts. Annotate restricted and warning areas adjacent to operating areas on the navigator's chart. Annotation of the applicable special use airspace will include boundaries, altitudes, times, and conditions.

***NOTE:***

Units will, if necessary, specify flight plan requirements and procedures in their local chapters to meet specialized mission requirements.

2.3.2. Emergency Airfields sufficient to cover area of flight.

2.3.3. High Terrain within 50 nautical miles of planned route of flight and 25 nautical miles of the departure/arrival base.

2.3.4. A local area chart of Operational Navigation Chart (ONC) or larger scale to sufficiently cover the planned departure/arrival, and to include highest terrain or obstacle within 25 nautical miles.

2.3.5. Mission Airspace encompasses boundaries and altitude structure of assigned mission airspace and E-3 orbit airspace.

**2.4. Briefings/Debriefings.** The AC/MCC will brief/debrief all crewmembers to ensure safe/effective mission accomplishment. Locally developed briefing guides (developed in reference to AFI 11-202V3, Chapter 2) will be used to provide a reference list of items that apply to a particular mission and will be used as the basis for mission planning and briefing actions. Brief items in any logical sequence, and those items understood by all participants may be briefed as "Standard." All aircrew members will attend these briefings unless excused by the AC/MCC unless local procedures dictate otherwise.

**2.5. Mission Planning Requirements.** The appropriate group commander may waive requirements contained in this paragraph if deemed necessary to accomplish a specific mission.

2.5.1. **Aircrew Planning:**

2.5.1.1. **Briefings.** Normally the planning/briefing sequence will be pre-mission planning, specialized briefings, and mission planning summary, all taking place on the duty day prior to the flight. AFRC aircrews will use local policy established by the 513 ACG commander. The pre-mission briefing will take place after the crew reports on the day of the flight. For pilot proficiency sorties (P-sorties), the crew may plan and brief on the day of the flight. In this instance, the crew will perform those items listed in locally developed Same Day Mission Planning Procedures for P-sorties.

2.5.1.2. **Passengers.** The AC will assign a crewmember to be responsible for passengers or distinguished visitors; see Transportation of Passengers in **Chapter 3** of this instruction for minimum responsibilities.

2.5.1.3. **Airframe Status.** Airframe status information will be obtained from the appropriate maintenance unit and open AFTO Form 781, **AFORMS Aircrew/Mission Flight Data Document** discrepancies will be briefed.

2.5.1.4. **Weapons Director Assisted/Directed Rendezvous.** The AC, Nav, and WD will thoroughly discuss the rendezvous procedures and techniques, if one will be accomplished. The Nav will supply the WD with the following information:

2.5.1.4.1. Air refueling initial point (ARIP) and air refueling control point (ARCP) coordinates in degrees LAT/LONG.

2.5.1.4.2. Air refueling altitudes.

2.5.1.4.3. Desired tanker offset and turn range, if necessary.

2.5.1.4.4. Range and offset calls desired during the rendezvous.

2.5.1.4.5. Any alternate procedures.

2.5.1.5. **Orbit Planning.** The P and Nav will coordinate with the MCC, SD, and ASO to determine optimum orbit configuration based on tasking and orbit limitations in T.O. 1E-3A-1-1, *Flight Manual, USAF Series E3B and E3C Aircraft.*

2.5.2. **Formation Planning.** The Formation Briefing Guide (**Attachment 3**) will be used when planning/briefing sorties involving two or more aircraft in an enroute formation.

2.5.3. **Mission Crew Planning.** The following items will be accomplished during mission planning:

2.5.3.1. The MCC will ensure mission activities are planned according to applicable checklists and guides.

2.5.3.2. MCC, SD, ASO, CSO, and Battle Staff will develop a communication plan to ensure accomplishment of mission requirements.

2.5.3.3. **Log Book Review/Mission Equipment Status:**

2.5.3.3.1. **Log Book Review.** The ART, CDMT, and CT will review the mission systems history log book if available. They will note equipment configurations used on previous flights,

recurring equipment malfunctions, and previous/new equipment malfunctions. The CDMT will also review the software versions used on past flights.

2.5.3.3.2. **Mission Equipment Status.** The ART, CDMT, and CT will obtain their respective systems status from the appropriate maintenance unit. Open AFTO 781 discrepancies will be noted. If possible, accomplish a face to face brief with the respective mission specialists. The Computer Automated Maintenance System (CAMS) will be used to determine open AFTO Form 781 discrepancies.

2.5.3.3.3. **Status Brief.** The ART, CDMT, and CT will brief the status to the MCC. The CT will also brief the CSO.

2.5.3.4. The CDMT will coordinate all computer software requirements. Minimum software requirements will be IAW local operating procedures.

2.5.3.5. The MCC will assess impact of equipment limitations and adjust tasking as necessary. The MCC will conduct a final review of mission crew planning.

**2.6. Local Checklists/Aircrew Aids.** Locally produced checklists and aircrew aids will include as a minimum:

2.6.1. Mission Planning Checklists (as required).

2.6.2. Briefing Guides.

**2.7. Theater Procedures Aircrew Aids.** The unit specifically tasked to support the area of operations will develop these aids (classified/unclassified) and make them available to the crew upon implementation of a contingency OPLAN for deployment to the theater. As a minimum, these aids will include:

2.7.1. Communications plans.

2.7.2. Flight and Mission crew positional actions/procedures.

2.7.3. Rules of Engagement.

2.7.4. Other information deemed necessary by the unit.

## Chapter 3

## AIRCREW OPERATING PROCEDURES

**3.1. Responsibilities.** The AC is responsible for the safe, effective conduct of flight operations. The aircrew is responsible to the AC for the successful accomplishment of all flight activities. That portion of the flight directly affecting the accomplishment of the E-3 mission will be coordinated with the MCC.

### 3.2. Minimum Crew Manning:

3.2.1. Minimum flight crew manning specified is the aircraft commander, copilot, navigator, and flight engineer. The applicable wing commander will determine conditions that warrant minimum flight crew manning on a case-by-case basis.

3.2.2. P-sorties will be flown with a minimum of five crewmembers; pilot, copilot, navigator, flight engineer, and one additional crewmember to act as safety observer. The applicable group commander has the waiver authority to fly without a safety observer.

3.2.3. Minimum mission crew manning to power up the mission systems will include MCC, ASO, ART, CDMT, CT, and CSO. Mission crew manning may vary by the type mission flown.

### 3.3. Aircrew Duty Period/Augmentation:

3.3.1. Aircrew Duty Period is 16 Hours. Augmented aircrew duty period is 24 hours. With any axis of the autopilot inoperative, limit the aircrew duty period to 12 hours and the augmented aircrew duty period to 16 hours.

3.3.1.1. An augmented flight crew will consist of a qualified pilot, navigator, and flight engineer in addition to the normal flight crew. Addition of flight crewmembers after the first takeoff in a crew duty period is not considered augmentation.

3.3.1.2. The applicable operations group commander will determine the augmented mission crew composition depending upon mission requirements.

3.3.2. **Crew Duty Day Extension.** The wing commander or equivalent may extend the aircrew duty period up to 2 hours. Refer to AFI 11-202V3, paragraph 9.10 for criteria to extend crew day. Augmented aircrew duty period may not be extended.

3.3.3. **Non-duty Time.** Crewmembers will be afforded 12 hours of non-duty time after a flight before reporting for normal non-flying duties, unless waived by squadron commander or operations officer.

3.3.4. **Crew Rest Timing.** Crew rest for successive flight activity will not begin sooner than 1 hour after final landing from previous flight activity, or when last crewmember departs after completing related aircrew duties.

3.3.5. **Crew Rest for Deploying/Redeploying Aircrews.** Due to the long flights and numerous time zone changes involved in flying to and from overseas deployed locations, unless waived by applicable operations group commander, ground time between landing and subsequent takeoff will not be planned for less than 18 hours. "Ops stops" made within an aircrew duty period do not apply.

3.3.6. **Management of AFRC Crewmembers.** The on-scene commander or E-3 detachment commander (DETCO) is responsible for the effective management of aircrews. An element of that responsibility is the effective use of the Reserve associate aircrew personnel during their periods of availability. There is no guarantee that missions will always be completed at scheduled Mission End Time (MET). Therefore, it is incumbent upon Reserve associate crew members to make available sufficient time to accommodate unavoidable delays in returning to home station. Scheduled Return Time (SRT) will be calculated MET plus 24 hours for routine exercise and operational deployments. SRT(s) for contingencies and missions of unknown duration will be determined by the 513 ACG/CC and 552 OG/CC or the requesting authority in coordination with HQ AFRC. The SRT will be determined and placed on the initial and subsequent flight authorizations until the mission is complete. The overall objective is to recover aircrews on schedule and provide scheduling stability. Two essential elements of this concept are realistic determination of SRT(s) based on mission duration and conscientious management by the on-scene commander or DETCO to ensure return of reserve associate aircrews by the MET. Except in uncontrollable or unusual circumstances, Reserve associate crewmembers must be assured that their missions will be complete within the SRT. The Reserve associate AC and MCC will be provided a copy of all mission itinerary changes. Delays in return of Reserve associate personnel beyond their SRT will be coordinated through the 552 OG/CC, the 513 AGC/CC, and concurred with by the aircrew. Every available means will be used to return Reserve associate crewmembers to home station to meet the SRT. If Reserve associate aircrew (or members) cannot extend past the SRT, the on-scene commander will verify whether military or contract means of transportation is available. If no such means are available, the on-scene commander or DETCO will use the most expeditious means, including commercial air, to return Reserve associate personnel to home station.

**3.4. Pre-Mission Duties.** Squadron commanders/operations officers may adjust crew report times to meet mission requirements. Crew report times will allow sufficient time to accomplish all preflight activities (normally 2+15 hours prior to takeoff). Normally use a 3+30 hour show time for P-sorties planned and flown on the same day. The FE and technicians should arrive at the aircraft 1+30 hours prior to the scheduled takeoff time. Crew show at the aircraft for all other crewmembers will normally be no later than 1 hour prior to the scheduled takeoff time. While deployed, the AC, with concurrence of the MCC and DETCO, may adjust crew report time to meet mission requirements.

**3.5. Minimum Equipment.** The 552 OG in conjunction with the 513 ACG, will develop a Minimum Equipment List (MEL) for use by all AWACS crews as a guide to determine operable equipment required for safe flight. 552 OG will forward a copy of the MEL to HQ ACC/DIS, HQ PACAF/DOT, and HQ AFRC/DOT.

**3.6. Communications:**

3.6.1. **Required Radio Calls.** Make the following radio calls to the applicable command post/squadron operations readiness center unless local directives specify otherwise:

3.6.1.1. Engine start time (at least 10 minutes prior to engine start to allow notification of Central Security Control (CSC)). (AC/CP)

3.6.1.2. Actual takeoff time. (Nav)

3.6.1.3. Significant changes in mission timing. (Nav)

3.6.1.4. Post-air refueling report. (CSO)

3.6.1.5. On station/Ops Normal time (NLT 15 minutes after arriving on station). (CSO)

3.6.1.6. Time off station and ETA (NLT 15 minutes after departing station). (CSO)

3.6.1.7. Maintenance codes and revised ETA (NLT 1 hour prior to final landing). (CSO)

3.6.1.8. ETA (if changed) when in UHF contact. (Nav)

3.6.1.9. Anytime a malfunction or incident occurs that will adversely affect mission accomplishment. (AC/MCC)

3.6.2. **Maintenance Codes (Aircraft Landing Status and System Capability Codes).** The MCC will ensure each technician provides the maintenance codes to the CSO at least 1+30 hours prior to landing. Use the Aircraft Landing Status and System Capability Codes as defined in ACCI 21-101, *Objective Wing Aircraft Maintenance* (superseded ACCI 21-166), and included in applicable aircrew aids.

**3.7. Weapons Director Assisted/Directed Rendezvous:**

3.7.1. **Communications.** Coordination between the Nav and WD during the rendezvous will be over Net 1. Other crewmembers will not use Net 1 for 30 minutes before the ARCT until after the refueling is complete, unless safety of flight dictates.

3.7.2. **Procedures.** The WD will execute preplanned type of rendezvous as coordinated with the AC and Nav. The WD will pass bearing, range, and offset of the tanker as prebriefed/required. The pilot will advise the WD/MCC when the flight deck has visual contact with the tanker and when to terminate mission crew assistance.

**3.8. On-Station Procedures:**

3.8.1. Normally, fly mission orbits at best endurance speed.

3.8.2. Aircraft position will be coordinated between the MCC, Nav, and AC.

**3.9. Radar Radiation Restrictions.** Do not radiate the mission radar at or below flight level (FL) 180 due to the potential for conflict with visual flight rules (VFR) traffic that may pass closer than 650 feet vertically and 1300 feet horizontally. However, during contingency operations, emergency situations, and special operations, the mission radar may be radiating at or below FL 180 within equipment limitations.

**3.10. Aircraft Position Monitoring.** Aircraft position relative to a preplanned track is the responsibility of both the flight and mission crews. Applicable wing commander may waive the following requirements if deemed necessary to accomplish a specific mission.

3.10.1. The pilot, co-pilot and navigator positions will be occupied, except for short periods of crew relief, during flights within 25 nautical miles (NM) of an established prohibited area or within 50 NM of a potentially hostile border.

3.10.1.1. **Flight Crew Procedures:**

3.10.1.1.1. Both pilots will monitor the E-3 position via radio navigational aids, inertial navigation system (INS), and global positioning system (GPS) (if applicable).

3.10.1.1.2. The navigator, in coordination with the pilot, will establish a radio navigation fix or line of position between the closest point of the E-3 orbit and the threat area as a "no fly beyond line" for all E-3 orbits. This information will be passed to the MCC.

3.10.1.2. **Mission Crew Procedures:**

3.10.1.2.1. The MCC must have at least a stand-behind position at an operational console when a dedicated console is not available.

3.10.1.2.2. The AWACS monitor's and MCC's consoles must display the AWACS DATA LINK net participant symbol and E-3 track tabular display (TD). If the accuracy of the E-3 symbol is in doubt, consider worst case location, and coordinate with the flight deck to take immediate action to reposition the aircraft from prohibited/threat areas.

3.10.2. An E-3 is operating under Military Assumes Responsibility for Separation of Aircraft (MARSA) conditions when flying in Warning Areas, Military Operating Areas, Restricted Areas, or Air Traffic Control (ATC) assigned working areas with other aircraft. The AC and MCC are responsible to ensure safe separation between the E-3 and other aircraft.

**3.11. AWACS Monitor:**

3.11.1. Any time the mission radar or identification, friend or foe (IFF) is operating, the MCC will designate an AWACS monitor to provide traffic advisories to the flight crew. Notify the flight crew and MCC when AWACS monitor assumes monitor duties, changes from weapons to surveillance (or vice versa), and whenever AWACS monitor is terminated.

3.11.2. The AWACS monitor will pass track information with the following parameters:

3.11.2.1. Tracks which are within $\pm$3,000 feet of E-3 altitude and 15 miles from the E-3 if the track is on a heading towards the E-3, overtaking, or passing in front of the E-3.

3.11.2.2. Traffic advisories will include any climbing/descending and/or maneuvering aircraft which could pose a threat to the E-3.

3.11.2.3. Expanded parameters as mutually agreed upon by the AC and MCC. Consider expanding the above parameters due to high density or uncontrolled airspace and threat assessment.

3.11.3. Pass the tracks to the flight crew over Net 1 giving clock position, range, altitude, and crossing information about the traffic. If the E-3 is in a turn, pass traffic calls using magnetic bearing and range rounded to the nearest 10 degrees. To increase situational awareness, AWACS monitor will normally monitor ATC frequency.

**3.12. Transportation of Passengers:**

3.12.1. **Space-A Passengers.** Space-A passengers will not normally fly on the E-3 due to mission and training requirements.

3.12.2. **Responsibility.** The crewmember(s) designated by the AC to be responsible for passengers or distinguished visitors will:

3.12.2.1. Supervise passenger movement, especially on the flight line.

3.12.2.2. Assist passengers in locating assigned seats.

3.12.2.3. Assist in familiarizing passengers with aircraft interior and survival equipment.

3.12.2.4. Brief all passengers according to AFI 11-202V3, *General Flight Rules* (using **Attachment 4** of this publication) prior to engine start.

3.12.2.5. Assist and direct passengers in the event of an aircraft emergency.

3.12.3. **Loading/Off-loading:**

3.12.3.1. All engines should be shutdown if large amounts of baggage must be stowed or removed, or if extensive passenger movement is required to or from the aircraft.

3.12.3.2. When appropriate, engines on the left side of the aircraft can be shutdown and an aircrew member will be positioned at the bottom of the steps to direct loading/off-loading operations prior to any passengers entering or departing the aircraft.

3.12.3.3. If only the left engines are shutdown, the TAXI BACK or an approved checklist for the given situation may be used.

3.12.4. **Passenger Comfort.** The pilot will make every effort to enhance the comfort of passengers. Flight operations should be planned for the minimum use of drag devices and maneuvers which might cause discomfort or apprehension.

**3.13. Debriefings:**

3.13.1. Conduct the maintenance debriefing as soon as practical after engine shutdown. The AC, MCC, FE, ART, CDMT, CT, and any crewmember making an entry in the AFTO Form 781A, **Maintenance Discrepancy and Work Document**, will attend.

3.13.2. If required, conduct an intelligence debriefing.

3.13.3. Situation depending, conduct a crew debriefing.

**3.14. Flying Clothing/Equipment:**

3.14.1. All aircrew members will wear or carry the minimum items of clothing and equipment according to applicable directives. In addition, all crewmembers will wear nomex flying gloves during engine start, takeoffs, landings, and emergencies except where the flight gloves hinder completion of required actions.

3.14.2. It is the responsibility of each crewmember to store/secure their personal and professional equipment carried on-board. Keep equipment clear of all entry doors, hatches and all emergency equipment during all ground and flight operations. The FE, CSO, and ART will ensure that these areas are clear of obstructions during their preflight inspection.

3.14.3. Crewmembers will not wear lightweight headsets when entering the lower compartments.

**3.15. Aircraft Security at Enroute Stops/Destination:**

3.15.1. The AC is responsible for ensuring aircraft security at enroute stops. Secure the aircraft as a priority B resource according to AFI 31-101, *The Air Force Physical Security Program*, as supplemented by MAJCOM. This requires a US entry controller (at least one per every two aircraft) and restricted access. Provide a copy of the flight orders and passenger manifest (as applicable) to the entry controller as a way to identify persons authorized entry to the aircraft as well as those crewmembers designated by the AC to have escort privileges. Perimeter patrol can be accomplished by host

nation security, but the entry controller must be US security personnel or a US E-3 crewmember. In addition, equipment classified as SECRET (that cannot be removed from the aircraft) must be safeguarded by US security personnel or a US E-3 crewmember. Only the AC may release security from the aircraft. Waiver authority is the appropriate wing commander.

3.15.2. The MCC is responsible for the security of classified mission documents and software. While deployed or during enroute stops, classified mission documents and software can be stored on the aircraft when U.S. security personnel are used as the entry controller. In the event you stop at a location where no US security personnel are available, the MCC will designate crewmember(s) to remain with the software and classified mission documents to provide security.

**3.16. Personal Publications Requirements.** Local units will issue each crewmember publications as determined necessary. See local supplement to this publication for requirements listing.

**3.17. Aircraft Recall/Diversion.** Challenge any recall or diversion of an E-3 using the appropriate authentication for the theater of operation. P-sorties do not require authentication.

**3.18. Transition Training:**

3.18.1. Do not conduct transition when scheduled takeoff or final landing is between 2400L and 0600L without squadron operations officer approval.

3.18.2. If practical, allow the mission crew to deplane if transition will be flown. Transition with mission crew can be flown provided the total does not exceed 2+30 hours. However, no more than 1+30 hours at one time without squadron CC/DO approval.

3.18.3. Do not accomplish transition until approved by the unit operations officer (or higher authority) if planning for transition was not done during mission planning, or unforeseen circumstances precluded prior coordination.

3.18.4. Transition duty day is a period of 12 hours that starts and runs concurrently with the maximum flight duty periods and applies to all flight crewmembers. Transition may be accomplished with additional crewmembers onboard who have exceeded transition duty day provided they are not occupying their primary flight crew duty position or performing flight crew instructor/SEFE duties.

3.18.4.1. Transition duty day is extended to 16 hours for flight evaluations and training sorties conducted by the 966 AACS. For other units, OG/CC can approve requests to extend transition duty day to 16 hours.

**3.19. Practice Emergency Drills.** Thoroughly plan, brief and practice simulated emergency drills, (e.g. Ditching, Crash Landing, Loss of Pressurization, Smoke or Fumes, and Fuselage Fire drills) during each training sortie. The following procedures apply:

3.19.1. The AC and MCC will coordinate prior to initiation, and make every effort to inform all instructors and evaluators of emergency drill timing in order to maximize training.

3.19.2. Operational requirements will not be interrupted.

3.19.3. Doors and hatches will not be opened and equipment will not be powered down. However, if a simulated emergency drill is performed after calling "off station", a normal equipment power down may be incorporated into the drill in anticipation of landing the aircraft.

3.19.4. Thoroughly pre-brief passengers.

3.19.5. The AC will make a public address (PA) announcement prior to commencing and when terminating practice emergency drills.

3.19.6. 970 AACS crews will practice simulated emergency procedures when mission profiles allow.

**3.20. Aircraft Cleanliness.** It is the AC and MCC's responsibility to ensure the aircraft is clean and orderly after a mission. All crewmembers are responsible for removing or stowing their personal and professional items prior to departing the aircraft.

3.20.1. All crewmembers are responsible for FOD prevention/accounting prior to deplaning.

**3.21. Aircraft Configuration for Static Display.** Whenever an E-3 is on static display and opened for viewing, there will be a passenger stand at each open door. Hatches will only be opened when an aircrew member is positioned at the hatch. ACs will ensure proper safety/security precautions are taken to protect the aircraft, passengers and crew. Command instructions concerning participation in static displays and aerial events provide further guidance.

## Chapter 4

## FLIGHT CREW OPERATING PROCEDURES

**4.1. Weather Minimums.** During instrument flight rule (IFR) weather conditions, comply with command directives.

**4.2. Preflight.** The AC will relay the following information to the applicable command post/ORC unless local directives specify otherwise:

4.2.1. Maintenance discrepancies which will delay preflight or takeoff.

4.2.2. Inoperative equipment that affects operational capability.

**4.3. Engine Start/Taxi:**

4.3.1. When using a motorized staircase vehicle (VIP Stand or "Air Stairs"), aircrews will close entry doors prior to their removal or placement.

4.3.2. The occupants of both pilot seats will have their seat belt fastened while taxiing and will also wear their shoulder harness during critical phases of flight.

4.3.3. If available, the navigator will back up the pilots by monitoring INS ground speed during taxi operations.

4.3.4. Taxi speed in the parking area or any congested area will be slow enough to accommodate a wing walker.

4.3.5. Conduct a last chance inspection, if a Supervisor of Flying (SOF) is available.

4.3.6. The navigator will use the weather radar to scan the departure path prior to takeoff to avoid flying into areas of heavy precipitation and/or possible turbulence.

**4.4. Departure.** Pilots will monitor only those radios required for flight operations (tower, departure, etc.). The navigator will monitor command post frequency. Do not initiate a radio call or PA announcement until safely airborne (300 feet above ground level (AGL) minimum). The FE will monitor mission crew interphone and primary radio required for flight operations from takeoff to cruise altitude.

**4.5. En route:**

4.5.1. Normally plan for maximum use of E-3 navigation equipment by flying great circle routes. Random RNAV/direct routing may be flown according to FLIP General Planning, **Chapter 4**. Navigators will annotate inflight clearances that change the route of flight on the inflight log and draw them on the chart. Revised ETA's for the new route of flight will be computed and annotated on the inflight log to maintain position awareness.

4.5.2. To ensure positional accuracy, the navigator will make a position check of the navigation equipment as soon as practical after initial level off, prior to initiating an air refueling rendezvous, and when assuming and departing station. Record these checks on the navigator's inflight log.

4.5.3. Recorded position checks will not exceed 1 hour (30 minutes while on station) unless flying safety dictates (for example, thunderstorm avoidance, aircraft emergency, etc.). While enroute, out of

radio aid range, GPS certified for aircraft use will be the primary means to confirm positional accuracy, otherwise, celestial lines of position (LOPs) will be primary means. The navigator will record sufficient information on the inflight log to accurately reconstruct the mission. When operating without INS's, full line entries are required. When INS's are operating, dead reckoning (DR) information is optional.

4.5.4. For 20/25 equipped aircraft, the navigator should normally operate the navigational computer system (NCS) with both INSs communicating with the omega computer (full-up) unless unit supplements direct otherwise. The split mode operation of the NCS is required on missions where any portion of the flight will be out of radio aid range.

4.5.5. For 20/25 equipped aircraft, accomplish a heading check on all missions by comparing the true heading from each INS. Use the INS true heading to compute the heading deviation of the magnetic heading systems. A celestial heading check is required if the difference between INS No. 1 and INS No. 2 is 1 degree or greater. Enter this deviation check (either by use of INS or celestial information) into the appropriate portion of the inflight log. Accomplish a complete heading check as soon as practical after final level off altitude.

4.5.6. One flight crew member will monitor the mission crew interphone at all times.

**4.6. On-Station:**

4.6.1. The CSO will normally control the use of HF1. The pilot will coordinate with the CSO if the flight crew requires its use. The flight crew will normally use VHF No.1 as a primary flight crew radio. The MCC/CSO will coordinate with the AC if the mission crew requires the use of either of the flight crew's VHF or UHF radios.

4.6.2. While on-station, full line position checks are not required. Entries will include adequate information for cross-check of the navigation equipment. To preclude excessive bank angle and degradation of the radar picture when in mission orbit or actively controlling aircraft, the navigator will notify the pilot and MCC prior to updating the NCS/INS.

4.6.3. For 20/25 equipped aircraft, split mode operation of the NCS is required on missions where the orbit is out of radio aid range. During an orbit in this situation, position checks may be made by comparing the NCS "tied-in" INS position with the "free running" INS position.

4.6.4. The AC has the responsibility and final authority for determining when the aircraft should depart station. ACs will consider forecast enroute and destination weather, enroute winds, icing, mission requirements, fuel requirements, and training requirements, etc.

4.6.4.1. Within 1 hour after assuming station, the flight crew will compute "Bingo fuel". If air refueling (AR) is planned after orbit, make a similar computation allowing enough fuel so that in the event of a missed AR, the aircraft can land at the destination or a preplanned alternate with the required fuel minimums. Bingo fuel computations will not include center wing tank fuel used as ballast to maintain center of gravity.(c.g.) forward of 35% mean aerodynamic chord (M.A.C.).

4.6.4.2. If fuel requirements necessitate a modification to on-station duration, pattern, or altitude the AC will notify the MCC of updated BINGO time.

4.6.4.3. Make a weather check no later than 2 hours prior to ETD from the orbit area. This check will include enroute, refueling track, and landing base weather. Crews will use all available weather sources to keep abreast of changes.

4.6.4.4. Crews should fly an alternate mission in lieu of dumping fuel to adjust gross weight should an equipment malfunction or an inability to complete an assigned mission occur. Alternate missions should be planned and briefed during mission planning day.

**4.7. Arrival and Approach:**

4.7.1. **Approach Briefing.** Prior to starting descent from cruise altitude, the pilot flying the approach will brief the crew in accordance with Technical Order and AFMAN 11-217, *Instrument Flight Procedures,* requirements. Three complete sets of the appropriate Terminal Approach Procedures and Standard Arrival Route (STAR) booklets will be in the cockpit to be used by the pilot, copilot, and navigator. The pilot not flying the approach and the navigator will monitor their respective instruments and all radio transmissions by the controlling agency, and advise the pilot making the approach when noting any deviation from the prescribed procedures or instructions.

4.7.1.1. The pilot not flying the approach will make the following advisory calls:

4.7.1.1.1. **Non-Precision Approaches:**

4.7.1.1.1.1. 100 feet above minimum descent altitude (MDA).

4.7.1.1.1.2. "Minimums" at MDA.

4.7.1.1.1.3. "Runway in sight." Make this call when the runway environment is in sight. Do not call too soon when obstructions to vision such as fog, haze, low stratus clouds, etc., are present.

4.7.1.1.1.4. "Visual descent point (VDP)."

4.7.1.1.1.5. "Missed Approach Point," if applicable.

4.7.1.1.2. **Precision Approaches:**

4.7.1.1.2.1. 100 feet above decision height (DH).

4.7.1.1.2.2. "Runway in sight." Make this call when the runway environment is in sight. Do not call too soon when obstructions to vision such as fog, haze, low stratus clouds, etc., are present.

4.7.1.1.2.3. "Decision height."

4.7.1.2. The navigator will back up the pilots in monitoring these calls and reporting deviations.

4.7.1.3. The pilot flying the aircraft will:

4.7.1.3.1. Acknowledge all advisory calls over interphone.

4.7.1.3.2. Announce intentions over interphone at the appropriate decision point for both instrument and visual approaches (e.g., "Crew we're going to land/go-around/touch-and-go.").

4.7.2. **Altitude Monitoring.** When climbing or descending, the navigator will call 1,000 feet above/below and level off altitude. While operating at less than 2,000 feet above the ground, the pilot not flying the aircraft will inform the pilot at the controls anytime the indicated altitude varies more than 100 feet from the desired altitude, or if the aircraft appears to be dangerously close to terrain or obstructions. The navigator will back up the pilots in observing and reporting these deviations.

4.7.3. **Radio Monitoring.** The flight engineer will monitor mission crew interphone and primary radio required for flight operations during the descent and landing.

4.7.4. **Priorities.** Upon commencing the final approach (glideslope interception or departing the final approach fix (FAF)), flight deck crewmembers will avoid unnecessary distractions. Priorities will be monitoring the approach/landing and completing the BEFORE LANDING checklist. All activities not associated with the approach/landing checklist accomplishment will cease.

**4.8. Takeoff and Landing Policy:**

4.8.1. **Aircraft Commander Responsibilities.** A qualified AC will:

4.8.1.1. Make all takeoffs and landings from the left seat when either of the following conditions exist:

4.8.1.1.1. When weather is below 300' ceiling and 1 statute mile (SM) visibility.

4.8.1.1.2. A distinguished visitor (Code 4, Code 4 equivalent, or higher) is on board as a passenger.

***NOTE:***

Instructor pilots may takeoff or land in either seat with the above conditions; however, a copilot will not occupy the left seat in **4.8.1.1.2.** above.

4.8.1.2. Take the aircraft controls whenever an emergency dictates and continue to fly the airplane until the situation is stabilized.

4.8.2. **Copilot Takeoffs and Landings.** Copilots may perform takeoffs and landings when either of the following conditions are met (see **Table 4.1.** and **Table 4.2.**):

4.8.2.1. Under IP/SEFE supervision (may be performed from either seat).

4.8.2.2. When a certified aircraft commander is in the left seat and the following requirements are met:

4.8.2.2.1. Weather is at least 300-feet ceiling and 1 SM visibility (or published minimums, if higher).

4.8.2.2.2. AC in left seat meets any of the following criteria (AFRC group commander can waive E-3 AC time):

4.8.2.2.2.1. Total Time is more than 1,500 hrs, and E-3 AC Primary Time is 100 hrs.

4.8.2.2.2.2. Total Time is 1,200 to 1,500 hrs, and E-3 AC Primary Time is 200 hrs.

4.8.2.2.3. Qualified ACs must have a Letter of Certification or certified AFORMS product reflecting this qualification.

4.8.2.2.4. There are no passengers on board.

***NOTE:***

Copilots possessing at least 200 hours E-3 flying time may make takeoffs and landings with passengers on board provided **4.8.2.2.1.**, **4.8.2.2.2.**, and **4.8.2.2.3.** above are complied with.

4.8.3. **Takeoff/Landing Data (TOLD):**

4.8.3.1. A flight engineer will compute/cross-check all initial takeoff and landing data during mission planning utilizing T.O. 1E-3A-1-1. The pilot or copilot will compute/cross-check this data using T.O. 1E-3A-1-1.

4.8.3.2. Use of Tab data in T.O. 1E-3A-1CL-1 during cockpit operations to recheck computations when required by weather changes, aircraft gross weight changes, etc., and for taxi back operations is permissible. Check all climbout criteria using T.O. 1E-3A-1-1.

4.8.3.3. When operational/contingency missions dictate the use of mission accomplishment methods, specific approval of the applicable group commander is required.

4.8.4. **Reduced Power Takeoffs.** The following information is provided in addition to that found in T.O. 1E-3A-1-1:

4.8.4.1. Whenever feasible, a reduced power takeoff should be made.

4.8.4.2. Actual inboard takeoff rated thrust (TRT) will be displayed on the inboard exhaust pressure ratio (EPR) bugs for quick reference in the event TRT is required.

4.8.4.3. For all reduced thrust takeoffs, 1,000 feet will be subtracted from runway available to compute all data except refusal speed.

4.8.4.4. Reduced thrust takeoffs may be accomplished on a wet runway provided the runway is free of snow, ice, and slush.

***NOTE:***

Reduced thrust takeoffs are permitted with falling precipitation provided precipitation is not moderate to heavy.

4.8.5. **Tailwind Takeoffs.** Tailwind takeoffs are not recommended and normally should not be planned or accomplished. If operational necessity or ATC considerations dictate acceptance of a tailwind condition, a maximum component of 10 knots may be used provided recomputed data does not exceed allowable T.O. 1E-3A-1-1 limits.

4.8.6. **Runway Utilization.** Minimum runway length/width for takeoff or landing is 7000/135 feet. Aircraft will normally takeoff and land on the longest available runway. Make rolling takeoffs whenever critical field length permits.

4.8.6.1. Intersection takeoffs are not recommended and will not be performed unless operational necessity dictates, in which case, follow command directives.

4.8.7. **Runway Condition Reading (RCR) Restrictions.** The pilot will ask for the minimum RCR recorded on the runway anytime an RCR is reported. Aircraft will not take off or land when reported RCR is less than 10. The applicable group commander has the authority to waiver the minimum RCR to 7 when operational necessity warrants. Do not conduct aircraft ground operations to include taxi and towing with a RCR less than 7.

4.8.8. **Crosswind Restrictions:**

4.8.8.1. Unless further restricted by aircraft gross weight or emergency conditions, the maximum crosswind component (gust included) for takeoff and landing with RCR 26/23 is 25 knots, RCR 15 is 20 knots, RCR 10 is 15 knots. If RCR falls between the above RCR values, use next lower

RCR restrictions. Operation at higher crosswind values requires specific approval by applicable group commander.

4.8.8.2. Copilots are limited to a maximum takeoff/landing component of 15 knots unless under IP/SEFE supervision.

4.8.9. **Climb Limited Maximum Takeoff Weight.** For normal operations, adjust the aircraft gross weight to achieve a minimum 3 engine climb gradient of 3 percent or as required to meet published climb gradient, whichever is greater.

4.8.10. **Simulated Engine Out Takeoffs.** Simulated Engine Out Takeoffs are prohibited.

4.8.11. **Obstacle Clearance.** Takeoff gross weights will be adjusted to:

4.8.11.1. Permit a minimum climb rate of 200 feet per nautical mile where no climb rate is specified in the Standard Instrument Departure (SID).

4.8.11.2. Permit the aircraft to be at the required height over the controlling obstacle when an obstacle and/or climb rate is specified on the SID.

4.8.12. **Noise Abatement.** When aircraft performance permits, use published noise abatement procedures.

4.8.13. **Landings.** Except in emergency situations, the following apply:

4.8.13.1. Computed landing distance plus 1,000 feet must not exceed runway available. If it appears that the actual touchdown will occur beyond the first 1/3 or 3,000 feet (whichever is less) of the runway length, pilots will go-around.

4.8.13.2. Landing gross weight will not exceed 250,000 pounds. Provided all other landing requirements can be safely met, the applicable group commander or DETCO may authorize landings over 250,000 pounds, if mission requirements dictate.

4.8.13.3. Full stop landings with less than 40 degrees of flaps are not permitted.

4.8.13.4. Make no more than one full stop in a 30 minute period. For planning purposes the AC will determine the brake energy used during landing and then using the decision speed (V1), without headwind correction, determine the brake energy for an abort during a subsequent takeoff. Do not takeoff until the combined energy after ground cooling is less than 28 million ft-lbs. If takeoff is made with brake energy above 10 million ft-lbs, follow the cooling air procedures.

4.8.14. **Touch-and-Go Landings.** Accomplish touch-and-go landings under the following conditions:

4.8.14.1. IP/SEFE supervision.

4.8.14.2. Minimum weather required is 300’ ceiling and 1 SM visibility.

4.8.14.3. Crosswind component does not exceed the following (including gusts): Dry runway--15 knots; wet runway--10 knots.

4.8.14.4. No passengers on board. Do not consider the following individuals as passengers for this restriction: Wing supervisors, E-3 maintenance personnel, 552 TS/513 ACG students not on aeronautical orders who are awaiting training (with applicable group commander approval),Computer Support Group (CSG) personnel conducting inflight software testing (with OG/CC

approval), AFA/AFROTC cadets, FAA/ATC personnel, weapons directors, and US customs personnel flying under the provisions of AFI 11-401 and MAJCOM supplement.

4.8.14.5. Criteria in paragraph **4.8.13.1.** above are met. In addition, the following length/width criteria apply: Dry runway--9,000 feet x 135 feet minimum; wet runway--10,000 feet x 135 feet minimum.

***NOTE:***

On a wet runway, touchdown in the first 2,000 feet of the runway or initiate a go-around.

4.8.14.6. On wet runways, conduct touch-and-go landings at flaps 50 degrees only. On wet runways, display the actual charted go-around EPR on the inboard EPR "bugs" for quick reference in the event go-around EPR is required while airborne. Outboard EPR "bugs" should display 1.50 EPR.

***NOTE:***

Wet runway touch-and-go landings are permitted with falling precipitation (i.e., drizzle or light rain), provided the precipitation is not moderate to heavy, not producing a runway surface condition (RSC), and it can be determined that water is not pooling on the runway.

4.8.14.7. Runway is free of all snow, ice, and slush. This does not preclude touch-and-go landings if there is loose, blowing snow on the runway provided the RCR is reported as 23 or higher. The 962 AACS will use the following procedures for Elmendorf AFB: landing surface (67.5 feet left and right of centerline) is completely clear of slush; if there is snow (SR/LSR/PSR) or ice (IR) on the runway, the minimum RCR reading for any portion of the runway is 10; the training is approved by the 3 OG/CC; and the SOF is supervising the activity.

4.8.15. **After Landing.** Do not initiate any checklists until clear of the runway.

**4.9. Occupancy of Flight Crew Duty Positions:**

4.9.1. Pilots may perform their duties in either seat. Individuals possessing only copilot qualifications will not perform duties in the pilot position during critical phases of flight unless under instructor pilot/SEFE supervision.

4.9.2. During non-critical phases of flight, if the pilot or copilot leaves the flight deck, the flight engineer position must be occupied by a qualified flight engineer or instructor/SEFE supervised flight engineer.

4.9.3. Non-AR qualified pilots may conduct air refueling activity from either the pilot or copilot position while under IP/SEFE supervision.

4.9.4. During critical phases of flight or simulated/actual emergencies unqualified pilots, or pilots not in training to achieve qualification in the E-3, will not occupy any flight crew duty position. Rated pilot General/Flag officers flying under provisions of MAJCOM guidance are exempt. Waiver authority is MAJCOM/DO.

**4.10. Midair Collision Avoidance:**

4.10.1. Man all flight deck seats below 10,000 feet MSL. Crews will maintain IFR clearance for separation, and use autopilot whenever practical. The navigator will use the weather radar when possible to search for traffic. The observer will be on headset and actively scan for traffic.

4.10.2. Make seat changes for the pilot or copilot position with the autopilot and altitude hold engaged if operative. Initiate seat changes on the downwind leg of the IFR traffic pattern or above 10,000 feet MSL. Emphasize clearing during the seat change.

**4.11. Equipment on the Flight Deck.** Hold crew equipment and publications on the flight deck to a minimum commensurate with mission requirements. Stowed equipment must not prevent rapid egress from the flight deck.

**4.12. In-flight Meals.** Due to the possibility that the pilot and copilot could be incapacitated by food poisoning if both consumed contaminated foods, neither will consume box lunches containing the same prepared ingredients within 1+30 hours of each other before or during flight. Frozen meals cooked prior to consumption, sealed IF rations, fruits, and commercially prepared and sealed items have a much lower potential for bacterial contamination and may be common to both pilot's lunches.

**4.13. Fuel Requirements.** Fuel reserves on all flights, for planning purposes, will be 18,000 pounds over the destination alternate fix or in accordance with AFI 11-202V3 whichever is greater.

4.13.1. Alternate fuel required at the initial approach fix at the original destination will allow a penetration and one approach, then climb to optimum altitude and arrive over the alternate with 18,000 pounds of fuel or greater.

4.13.2. Minimum landing fuel for flights on an IFR clearance is 15,000 pounds. If it becomes apparent the aircraft will not land with 15,000 pounds of fuel remaining, declare "Minimum Fuel" and land short of destination or divert as required. However, if the destination is VFR, and only after the aircraft is established in the local traffic pattern, pilots may practice approaches and landings until 12,000 pounds of fuel remain provided CG limits are not exceeded.

4.13.3. Pilots will declare emergency fuel when the aircraft will not be on the ground with 10,000 pounds of fuel.

4.13.4. When mission requirements dictate and when specifically approved by the applicable group commander, fuel reserves may be reduced (provided they meet or exceed AFI 11-202V3 requirements) to the following:

4.13.4.1. **Initial Approach Fix.** 12,000 pounds.

4.13.4.2. **Minimum Fuel.** 10,000 pounds.

4.13.4.3. **Emergency Fuel.** 8,000 pounds.

**4.14. Resource Conservation.** Plan missions and make all attempts to fly airspeeds, routes, and altitudes that will produce the least fuel consumption to meet mission requirements.

**4.15. Aircraft Ground Refueling.** Flight engineers with a current refueling certification are authorized to refuel the aircraft at enroute bases where E-3 maintenance support is not available. When refueling, the flight engineer will comply with T.O. 00-25-172 and T.O. 1E-3A-2-7.

4.15.1. An abnormal condition will exist when:

4.15.1.1. Adequate portable fire fighting equipment is unavailable or;

4.15.1.2. Any condition(s) listed under abnormal condition, Section 1, T.O. 00-25-172 exist(s).

***NOTE:***

Anytime a condition listed in **4.15.1.1.** or **4.15.1.2.** above exists, a standby fire truck will be in position prior to servicing.

4.15.2. In the event base support is limited or nonexistent, other crewmembers may be used as refueling team members at the discretion of the AC. The flight engineer will brief all team members on use of fire equipment, safety precautions, and emergency shutdown procedures.

**4.16. Fuel Jettisoning.** Conduct fuel dumping only to reduce gross weight in an emergency or for operational necessity. When circumstances permit, dump above 5,000 feet AGL over unpopulated areas in designated fuel dump areas. Advise the appropriate air traffic control agency of intentions, altitude, and location when fuel is jettisoned and when the operation is complete. Make the appropriate entry on the AFTO Form 781A.

**4.17. Thunderstorm Avoidance:**

4.17.1. Pilots will neither file a flight plan route nor fly into an area of known or forecast thunderstorm activity when the weather radar is inoperative or unusable and thunderstorm activity cannot be visually circumnavigated.

4.17.2. Avoid thunderstorms by 10 NM below FL 230 and 20 NM at or above FL 230. In the vicinity of the airport, maintain at least 5 NM separation from heavy rain showers and avoid thunderstorm activity by at least 10 NM below FL 230. Approaches or departures may be authorized by the appropriate group commander if thunderstorms are officially observed to be no closer than 5 NM from the airport. The thunderstorm must not be producing any hazardous conditions at the airport, or in the respective landing or takeoff corridor, and must not be forecast/observed to be moving in that direction.

**4.18. Aircraft Interior Lighting.** During ground/flight operation, it is recommended to keep flight deck lighting at the lowest possible level. During night parking, do not use the high level flight deck lighting until after the aircraft is chocked and brakes are released so the pilots can ensure the aircraft does not roll.

**4.19. In-flight Engine Failure.** If an engine is shutdown in flight, terminate the mission and land as soon as practical, IAW T.O. 1E-3A-1, Section 3, *General Emergency Procedures*.

**4.20. In-flight Troubleshooting.** After flight manual emergency procedures are complete, aircrews will not conduct in-flight troubleshooting.

**4.21. Flight Control Malfunctions:**

4.21.1. Quick fix procedures (red ball) to repair primary flight control malfunctions are prohibited. If a flight control malfunction occurs during preflight/ground operations, the AC will order the aircraft aborted and debrief the malfunction to maintenance.

4.21.2. In flight, if a primary flight control malfunction is experienced, the flight crew will perform the appropriate flight manual procedures, terminate the mission, and land as soon as practical, IAW T.O. 1E-3A-1, Section 3, *General Emergency Procedures*.

**4.22. Flight Crew Communications.** The flight crew will monitor the briefed primary radio during takeoff, climb, descent, and landing unless directed to do otherwise. The observer's seat occupant will monitor communications and be briefed on the relationship between the pilot's Audio Distribution System (ADS) and the observer's interphone.

**4.23. Divert Charts.** Units will develop divert charts to cover their local operating areas and publish them in their local chapter to this instruction. Information contained on these charts should include divert airfields, headings, distances, flight times, fuel requirements, and cruise altitudes. Carry divert charts on all flights.

**4.24. Simulator Only Maneuvers.** The following maneuvers will be practiced in the flight simulator only:

4.24.1. Aborted takeoff.

4.24.2. Simulated engine out takeoffs and simulated engine failure during takeoff and/or climbout to traffic pattern altitude.

4.24.3. Simulated two-engine operations (cruise, approach, go-around, and/or landing).

4.24.4. Simulated three-engine rudder boost out operations (cruise, approach, go-around, and/or landing).

4.24.5. Initial Buffet/Stick Shaker Demonstration.

**4.25. Simulated Emergency/Engine-Out Procedures:**

4.25.1. Inflight, prior to simulated emergency procedures, the IP/AC must alert all crewmembers in the cockpit.

4.25.2. Except for simulated engine-out landings, restore all aircraft systems to normal operation prior to landing.

4.25.3. In an actual emergency, all student pilot/copilot training and simulated emergency procedures will be terminated. Training will resume only when the AC has determined that no hazard to safe aircraft operation exists.

4.25.4. IP/SEFE supervision is required for all touch-and-go's, flaps 14, flaps 25, and flaps 25 to 50 approaches/landing. Prior to performing a flaps 14 approach/landing, update brake energy limited landing weight and brief differences to normal configuration habit patterns, emphasizing gear lowering sequence.

4.25.5. Conduct simulated engine-out approaches and touch and go's/landings only under the following conditions:

4.25.5.1. No passengers on board.

4.25.5.2. Certified pilots/copilots may accomplish simulated engine-out missed approaches, go-arounds, and full-stop landings in VFR conditions (day or night) without IP/SEFE supervision (see **Table 4.1.** and **Table 4.2.**).

4.25.5.3. Pilots and/or copilots under IP/SEFE supervision may practice simulated engine-out approaches, and touch-and-go's in day and night instrument meteorological conditions (IMC) provided weather conditions are at or above published circling minimums (ceiling and visibility) for the runway the approach is flown to, or 1,000 foot ceiling and 3 miles visibility, whichever is higher.

***NOTE:***

Copilots assigned to PACAF will comply with command directives in PACAF supplement.

4.25.5.4. Do not accomplish actual engine shutdown inflight. A reduction in thrust can adequately simulate training in the control procedures.

4.25.5.5. Limit all inflight simulated engine-out activity to a gross weight of 270,000 pounds or less with rudder boost on.

4.25.5.6. All missed approaches will be 200 feet height above touchdown (HAT) or published minimums whichever is higher. Approaches may be continued visually to 200 feet above published touchdown zone elevation prior to executing a missed approach for training purposes when DH and MDA are above 200 feet HAT.

4.25.5.7. Pilots/copilots (under IP/SEFE supervision) may continue simulated engine-out approaches to a touch-and-go provided they follow normal four-engine takeoff procedures.

4.25.5.8. During a simulated engine-out approach, if an unplanned go-around or missed approach is executed, establish symmetrical thrust on all engines as soon as safe and practical.

**4.26. Air Refueling Restrictions/Procedures:**

4.26.1. Plan to air refuel at a gross weight greater than 205,000 pounds and with a center of gravity forward of 32% M.A.C.. Air refueling can be accomplished outside of these limits provided it is thoroughly briefed prior to conducting the AR.

4.26.2. For all normal operations, the gross weight inflight with flaps up will be limited to the maximum gross weight versus altitude for a 2.5G load factor IAW T.O. 1E-3A-1, Section 5. Use of gross weights above these limits requires applicable group commander approval.

4.26.3. Do not accomplish air refueling during training missions when any conditions are encountered which, in the opinion of the pilot or boom operator, result in marginal control of the aircraft or the boom.

4.26.4. Do not accomplish air refueling if you encounter any primary flight control malfunctions or with the series yaw damper inoperative.

4.26.5. Do not accomplish air refueling without tanker disconnect capability, to include manual boom latching, unless an actual fuel emergency or operational necessity exists.

4.26.6. Copilots are authorized to fly the aircraft up to and including precontact with any refueling qualified pilot in the left seat, but will not close inside precontact unless under the supervision of an IP/SEFE, or an AC certified to supervise CP air refueling (ref **Table 4.1.** and **Table 4.2.**).

4.26.7. Pilots/copilots undergoing initial qualification or upgrade training may conduct a rendezvous within 1 NM of the tanker without IP/SEFE supervision.

4.26.8. To allow time to establish communications with ATC, discontinue air refueling at least 3 minutes prior to the end of track and descend to the bottom of the block.

4.26.9. Back-up air refueling frequency is HF 6761 upper side band (USB).

**4.27. Post Air Refueling Procedures.** Use the following procedures after completion of air refueling to achieve safe separation from the tanker:

4.27.1. The receiver pilot will maintain stabilized in the contact position while asking for or initiating a disconnect and will remain stabilized until confirming either visually or verbally that the boom is clear.

4.27.2. After confirmation that the boom is clear, the receiver pilot will begin to move aft to the pre-contact position. Once this separation has been attained, the receiver pilot will begin a slow descent at approximately 500 to 1,000 feet per minute (fpm) and establish a power setting that will ensure increased vertical separation and avoid under-running the tanker during descent.

4.27.3. The pilot will establish a minimum of 1,000 feet vertical separation between the receiver and the tanker. Do not make any turns from the established air refueling heading during the descent phase.

4.27.3.1. Establish 1,000 feet vertical separation and engage autopilot before initiating the post-air refueling checklist. Slipway doors may be closed to reduce cockpit noise levels.

4.27.3.2. To ensure safe separation during the separation maneuver, the pilot not in control of the airplane and the navigator will monitor the tanker's position by whatever means possible (visual, weather radar, air-to-air TACAN, etc.).

4.27.3.3. If the receiver cannot descend to establish the required vertical separation, the receiver will move back to the precontact position and request the tanker initiate a climb to obtain a minimum of 1,000 feet vertical separation.

**4.28. Formation Restrictions.** The enroute cell and air refueling formations described in T.O. 1-1C-1-27, *E-3 Air Refueling Procedures With KC-135 and KC-10*, are the only authorized formations. Crews will only fly these formations when specifically tasked, using the procedures published in the appropriate tech orders. Crews will thoroughly brief using the formation briefing guide at **Attachment 2**.

**4.29. Abnormal Configurations.** Do not fly missions with known abnormal configurations unless approved by the applicable group commander. Abnormal configurations include six or seven brakes operation, partial spoilers, inoperative antiskid, etc.

**4.30. Three-Engine Ferry Flights.** Do not conduct three engine ferry flights unless specifically approved by applicable MAJCOM/DO.

**4.31. Landing Attitude Demonstrations.** Landing attitude demonstrations may only be accomplished by IP/SEFE's or ACs under IP/SEFE supervision. The following restrictions apply:

4.31.1. Must be accomplished four engine only.

4.31.2. Dry runway only.

4.31.3. Flaps 50 only.

4.31.4. Normal dry runway touch-and-go conditions and restrictions apply.

4.31.5. Go-around will be initiated if aircraft touches down during the initial roundout.

4.31.6. Go-around will be initiated no later than 4000 feet of runway remaining.

**Table 4.1. AC/CP Certifications (Experience Requirements).**

| ACTIVITY | AC | CP |
|---|---|---|
| Certified AC supervises any CP takeoff and landing | -1500 total hours AND<br>100 pri/sec hours as CMR E-3 AC<br>**OR**<br>-1200 total hours AND<br>-200 pri/sec hours as CMR E-3 AC | -200 pri/sec hours as CMR E-3 CP with passengers |
| Certified AC conducts or supervises certified CP to conduct simulated engine out approaches and landings | -6 months as CMR E-3 AC<br>-200 pri/sec hours as CMR E-3 AC | -6 months as CMR E-3 CP<br>-200 pri/sec hours as CMR E-3 CP |
| Certified AC supervises certified CP A/R | -6 months as CMR E-3 AC<br>-200 pri/sec hours as CMR E-3 AC<br>-10 ARs as CMR E-3 AC | -6 months as CMR E-3 CP<br>-10 ARs w/IP as CMR E-3 CP |
| **Note:** AFRC group commander may waive E-3 hour requirements based on previous AC experience. | | |

**Table 4.2. AC/CP Certifications (Restrictions).**

| ACTIVITY | AC | CP |
|---|---|---|
| Certified AC supervises any CP takeoff and landing | -SQ/CC signed letter in FTF<br>-Weather (300/1)<br>-No DVs | -SQ/CC signed letter in FTF<br>-With passengers-CP needs 200 total hours as E-3 CP<br>-Weather (300/1)<br>-No DVs |
| Certified AC conducts or supervises certified CP to conduct simulated engine out approaches and landings | -SQ/CC signed letter in FTF<br>-Weather (1500/3)<br>-Only to full stop/go-around | -SQ/CC signed letter in FTF<br>-Supervised by a Certified AC<br>-Weather (1500/3)<br>-Only to full stop/go-around |
| Certified AC supervises certified CP A/R | -SQ/CC signed letter in FTF<br>-Autopilot ON<br>-Day Only | -SQ/CC signed letter in FTF<br>-Supervised by certified AC<br>-Autopilot ON<br>-Day only |

**Note:** Total hours includes evaluator, instructor, primary, and secondary time. Primary hours includes E-3 and TC-18 time. The individual must have a certification letter signed by the squadron commander in their training folder prior to accomplishing any of these activities.

## Chapter 5

## MISSION CREW OPERATING PROCEDURES

### 5.1. E-3 Missions:

5.1.1. **E-3 Tactical Mission:**

5.1.1.1. The E-3 is a primary airborne element of the Theater Air Control System. Specific mission taskings, to include functioning as a Control and Reporting Center (CRC), will be determined by the Joint Force Air Component Commander (JFACC). The E-3 may be responsible for:

5.1.1.1.1. Surveillance within its assigned area of responsibility.

5.1.1.1.2. Detect and assess potential threats; pass threat calls.

5.1.1.1.3. Forwarding accurate and timely surveillance data to the CRC/Air Operations Center (AOC) and crosstell appropriate surveillance data to adjacent command and control facilities.

5.1.1.1.4. Identification of traffic in areas without existing ground identification authority or when ground identification facilities are degraded and not capable of providing the identification function.

5.1.1.1.5. Issuing of scramble orders or airborne orders in the absence of ground tactical air control system (TACS) or when authority is delegated by the (AOC).

5.1.1.1.6. Commitment of defensive counterair weapons. This may be self-initiated or directed by a AOC/CRC.

5.1.1.1.7. Maintaining status of available weapons and equipment.

5.1.1.1.8. Airspace regulation and control within an assigned control area.

5.1.1.1.9. Maintaining continuous communications with other airspace control agencies.

5.1.1.1.10. Relay of instructions from the AOC, CRC, and other elements of the TACS (e.g., ABCCC, JSTARS) to airborne aircraft.

5.1.1.2. When the primary or alternate AOC is inoperative, the JFACC may direct an E-3 to continue to manage tactical air operations until the AOC becomes operational. Under this condition, additional E-3 responsibilities may include voice coordination with Army, Navy, Allied units, and Air Support Operations Centers (ASOCs).

5.1.2. **E-3 NORAD Missions.** The NORAD strategic air defense mission covers three roles: air sovereignty, tactical warning, and atmospheric defense. Air sovereignty is the peacetime policing of the combined US/Canadian sovereign airspaces to ensure that all air traffic using the airspace complies with national regulations. The second role of tactical warning includes detecting, characterizing, and assessing the potential threat. The third role is the wartime role of atmospheric air defense against an enemy threat or attack. NORAD performs these roles by integrating a variety of sensor equipment, communications, aircraft, and facilities.

5.1.3. **E-3 Counterdrug Missions.** The E-3 counterdrug (CD) mission is to assist national agencies in interdiction of suspected drug traffic IAW command directives.

**5.2. Responsibilities:**

5.2.1. **Battle Management.** The onboard battle staff, in conjunction with the E-3 MCC, performs the battle management function.

5.2.1.1. **Battle Staff/Airborne Command Element (ACE) Team.** The Battle Staff/ACE Team is responsible for the total assigned battle management function and will:

5.2.1.1.1. Execute CINC's intent and serve as onboard theater ROE expert for tasked mission.

5.2.1.1.2. Determine priorities and authorize the reallocation/distribution of the assets assigned.

5.2.1.1.3. Establish/maintain contact and coordinate with appropriate commanders.

5.2.1.1.4. Recommend changes to the mission as necessary to maintain continuous coverage of the assigned AOR.

5.2.1.1.5. Receive, interpret, and disseminate information to appropriate battle staff and region personnel.

5.2.1.2. **Mission Crew Commander.** The MCC is responsible to the appropriate commander (whether onboard as part of the battle staff or on the ground) for the safe, efficient and successful conduct of the E-3s air battle. The MCC is responsible for the leadership, management, supervision, and training of the mission crew. Advise the pilot and crew of situations that could affect safety of flight operations or mission accomplishment. The MCC will:

5.2.1.2.1. Notify the AC and mission crew of all situations that could adversely affect flight operations or mission accomplishment.

5.2.1.2.2. Execute commanders directives and perform battle staff duties as required, to include transmitting, receiving, authenticating and actioning command messages.

5.2.1.2.3. Responsible to the appropriate command authorities for the application and execution of applicable operations orders (OPORDs), OPLANS, special instructions (SPINS), ROE and other theater specific command directives involving E-3 employment.

5.2.1.2.4. Ensure the mission crew is thoroughly briefed and prepared to meet mission tasking.

5.2.1.2.5. Have a thorough understanding of the capabilities and tactics of hostile and friendly forces.

5.2.1.2.6. Ensure mission systems are configured and the database information is current and correct to meet mission tasking. Supervise the communications, data processing and display, and sensor system functions to ensure effective support of mission objectives. Thoroughly assess equipment malfunctions to determine impact on mission accomplishment. If the malfunction cannot be corrected, coordinate with ground maintenance. Notify and coordinate with the E-3 squadron operations officer on any limitations to operations and to determine further action. Initiate this notification as soon as it becomes apparent the mission will be adversely affected.

5.2.1.2.7. Coordinate and manage the air battle with appropriate command authorities and direct tactical action IAW theater ROE.

5.2.1.2.8. Coordinate with the AC on tactical positioning of the E-3 to ensure safe and efficient mission execution.

5.2.1.2.9. Manage the orderly transfer of database information and station responsibility. Declare "ops normal/on-station" when the mission systems required to accomplish the assigned mission are operational, and surveillance, weapons and technician teams have completed their minimum station assumption requirements. Notify the appropriate command authorities of the "ops normal/on station" calls, and other theater specific calls as specified by directives and any deviations from mission taskings.

5.2.1.2.10. Supervise the SD, ASO and technicians to ensure safe and effective mission accomplishment.

5.2.1.2.11. Determine, supervise and manage the communications, data processing and display, and sensor requirements to ensure effective support of mission tasking.

5.2.1.2.12. Thoroughly assess equipment malfunctions and determine impact on the assigned mission. If the malfunction cannot be corrected and will impact the assigned mission, coordinate with maintenance as required. Develop a work around plan, if practical, and notify the appropriate command authorities of any limitations as soon as possible. If the work around plan includes the continued operation of malfunctioning mission equipment, have the appropriate technician(s) identify all pertinent Notes, Warnings and Cautions which affect the equipment in question. Coordinate with the AC to assess the risk of continued use against safety and integrity of the aircraft, and mission accomplishment. The AC is the final authority and is responsible for the safety of the aircraft.

5.2.1.2.13. Approve/coordinate downtime for scheduled/unscheduled maintenance.

5.2.1.2.14. Debrief the crew, appropriate command authorities and unit agencies as required by theater directives.

5.2.1.2.15. Ensure all required mission forms/reports are completed and turned in to the appropriate agencies/offices as required.

5.2.2. **Surveillance.** The Air Surveillance Officer (ASO), the Electronic Combat Officer (ECO), the Senior Surveillance Technician (SST), and the Air Surveillance Technicians (AST) perform the surveillance and electronic support (ES) functions. The ASO is responsible for the detection, tracking, identification, height measurement, display, telling, and recording/documenting of surveillance and electronic support data. Duties also include extracting data from OPORDS, OPLANS, and other theater and command directives for E-3 employment and surveillance mission execution.

5.2.2.1. **Air Surveillance Officer.** The ASO is responsible to the MCC for all surveillance functions. The ASO will:

5.2.2.1.1. Monitor and direct the accurate collection, display, and dissemination of surveillance data.

5.2.2.1.2. Direct and/or coordinate the identification of all observed activity within designated areas.

5.2.2.1.3. Analyze the surveillance situation and advise the MCC of surveillance capabilities.

5.2.2.1.4. Notify the MCC whenever Electronic Attack (EA) is experienced and coordinate Electronic Protection (EP) actions.

5.2.2.1.5. Notify the MCC and SD of any suspected emergency IFF/SIF returns or triangular distress patterns.

5.2.2.1.6. Document all radar/IFF electronic combat training events on applicable forms and forward them to the squadron Weapons and Tactics office.

5.2.2.1.7. Coordinate with external agencies to ensure accomplishment and accuracy of active and passive tracking, and track tell.

5.2.2.1.8. Assign and supervise ECO, SST, and AST responsibilities.

5.2.2.1.9. Monitor and maintain sensor quality for mission duration.

5.2.2.1.10. Ensure surveillance team members receive maximum training from available resources including simulation (SIM).

5.2.2.2. **Electronic Combat Officer.** The ECO is responsible to the ASO for the Electronic Support Function. The ECO will:

5.2.2.2.1. Monitor the accurate collection, display, and dissemination of electronic support data.

5.2.2.2.2. Analyze the electronic support situation and advise the ASO of electronic support capabilities.

5.2.2.2.3. Locate, report, and log all emitters of interest.

5.2.2.2.4. Coordinate with external agencies to ensure the accuracy of electronic support data.

5.2.2.2.5. Estimate and/or predict the capabilities of hostile forces and friendly forces relative to the electronic order of battle (EOB).

5.2.2.2.6. Direct and/or coordinate the electronic support identifications of all observed activity within designated areas.

5.2.2.3. **Senior Surveillance Technician.** The SST is a supervisory position responsible to the ASO and will provide assistance as required. The SST will:

5.2.2.3.1. Supervise the detection, tracking, reporting, identification, and recording of surveillance data.

5.2.2.3.2. Ensure the completion of AST duties.

5.2.2.3.3. Monitor sensors in the assigned areas, notify the ASO of any unusual presentations.

5.2.2.3.4. Coordinate with the ASO/CSO or CT, as required, in the establishment and operation of data links.

5.2.2.3.5. Notify the ASO of any suspected emergency IFF/SIF returns or triangular distress patterns.

5.2.2.4. **Air Surveillance Technician.** The AST is responsible for surveillance functions as directed by the ASO/SST. The AST will:

5.2.2.4.1. Initiate on all data trails appearing within the assigned AOR and ensure continuity of tracking.

5.2.2.4.2. Upon receipt of voice told tracks, monitor telling source and enter that track data into the computer. On such tracks, monitor sensor data that may correlate and take appropriate action to effect correlation.

5.2.2.4.3. Tell tracks.

5.2.2.4.4. Notify the ASO/SST of all unusual console presentations (e.g. EA, electro-magnetic interference (EMI), erroneous computer generated data, etc.).

5.2.2.4.5. Notify the ASO/SST of any suspected emergency IFF/SIF returns or triangular distress patterns.

5.2.2.4.6. Initiate and maintain passive tracking when directed by the ASO/SST.

5.2.2.4.7. Assist the ASO/SST with flight plans and other identification functions.

5.2.3. **Weapons.** The Senior Director (SD) and Weapons Directors (WD) perform the weapons function. They are responsible for the direction, monitoring, and flight following of assigned aircraft during tactical and air refueling missions, both operational and training. They are responsible for extracting data from OPORDS, OPLANS, and other theater and command directives for E-3 employment and weapons mission execution.

5.2.3.1. **Senior Director.** The SD is responsible to the MCC for conduct of the air battle and for the control of all assigned aircraft and weapons systems. The SD will:

5.2.3.1.1. Supervise all WD activities.

5.2.3.1.2. Maintain data on friendly and enemy orders of battle.

5.2.3.1.3. Estimate and/or predict the capabilities of hostile forces, develop plan(s) which organize friendly counter forces, and defeat/negate the threat.

5.2.3.1.4. Maintain current and accurate tactical situation, weapons, weather, airbase status, and other situational information.

5.2.3.1.5. Coordinate the air battle with appropriate agencies.

5.2.3.1.6. Direct the pairing of weapons against hostile targets.

5.2.3.1.7. Coordinate directly with the ASO to obtain surveillance support and optimum sensor quality.

5.2.3.1.8. Coordinate with other agencies to ensure the accomplishment of all assigned weapons missions.

5.2.3.1.9. Notify the MCC and ASO of any suspected emergency IFF/SIF returns or triangular distress patterns.

5.2.3.1.10. Ensure weapons team members receive maximum training from available resources including simulation (SIM).

5.2.3.1.11. Develop and maintain the communications worksheet for the weapons section. Responsibility for the master communications worksheet may also be the responsibility of the SD if delegated by the MCC.

5.2.3.2. **Weapons Director.** The WD is responsible to the SD for the control and safe regulation of air traffic for all assigned missions. The WD will:

5.2.3.2.1. Locate, identify, and track aircraft assigned for control.

5.2.3.2.2. Control aircraft against assigned targets.

5.2.3.2.3. Ensure orderly and expeditious recovery of assigned aircraft.

5.2.3.2.4. Coordinate with internal and external agencies, as applicable, on matters pertaining to flight safety/mission accomplishment.

5.2.3.2.5. Notify the SD of any suspected emergency IFF/SIF returns or triangular distress patterns.

5.2.4. **Communications.** The communications function is performed by the Communications Technician (CT) and the Communications Systems Operator (CSO).

5.2.4.1. The CT is responsible to the AC/MCC for the proper maintenance and operation of flight and mission crew communications and related equipment. The CT will:

5.2.4.1.1. Evaluate equipment status of the Communications Functional Group (CFG) and advise the MCC of its capabilities to support mission requirements.

5.2.4.1.2. During deployment or dispersed base operations, the CT will assist ground based personnel with maintenance activities when required or requested. When ground based maintenance personnel are not available, the CT is responsible for organizational level maintenance on the communications group and its related subsystems utilizing the available technical data, and the Readiness Spares Package (RSP) as applicable.

5.2.4.2. The CSO is responsible to the AC/MCC for proper programming management and operation of flight and mission crew communications systems. The CSO will:

5.2.4.2.1. Tune, configure, and operate clear and secure voice communications systems and communication nets to support mission requirements.

5.2.4.2.2. Configure and operate data link equipment and software.

5.2.4.2.3. Perform frequency management; recommend and make required communications changes.

5.2.4.2.4. Compile and transmit required inflight and position reports to appropriate facilities.

5.2.4.2.5. Coordinate, obtain, use, and control COMSEC material and equipment.

5.2.5. **Computer Display Maintenance Technician (CDMT) and Airborne Radar Technician (ART).** The CDMT performs Data Processing and Display functions. The ART performs Sensor Systems functions.

5.2.5.1. **Data Processing and Display.** The data processing and display function is performed by the CDMT. The CDMT is responsible to the MCC for the operation, monitoring, and limited inflight maintenance of the Data Processing, Data Display, Onboard Test Monitor and Maintenance functional groups, Electronic Support System (ESS), and Electronic Support Measures Group (ESMG). The CDMT will:

5.2.5.1.1. Perform loading of the Data Processing System, auxiliary system(s), and monitor the performance of the Data Processing System, Data Display System, auxiliary system(s). The CDMT will also perform Onboard Test Monitor and Maintenance Groups using fault indications, ESS, ESM, and software messages displayed at the Computer Technician console.

5.2.5.1.2. Monitor the status of mission avionics equipment tested by the computer for efficient operation.

5.2.5.1.3. Service the Data Processing peripheral equipment.

5.2.5.1.4. Perform diagnostic programs.

5.2.5.1.5. Perform inflight troubleshooting and fault isolation.

5.2.5.1.6. Perform replacement of modules, parts, and inflight maintenance repairs as required.

5.2.5.1.7. Perform utilities programs.

5.2.5.1.8. During deployment or dispersed base operations, the CDMT will assist ground based personnel with maintenance activities when required or requested. When ground based personnel are not available, the CDMT is responsible for organizational level maintenance on the Data Processing Functional Group, Data Display Functional Group, Onboard Test Monitor Group and the Control Power Supply (CPS) and its related subsystems using the available technical data and RSP as applicable.

5.2.5.2. **Sensor Systems.** The ART is responsible to the MCC for the operation and maintenance of the radar and IFF systems and their subsystems. The ART will:

5.2.5.2.1. Initiate and monitor the Surveillance Radar Functional Systems and Identification Functional Systems.

5.2.5.2.2. Perform radar equipment test (Fault Isolation) routines and other checkouts.

5.2.5.2.3. Troubleshoot malfunctions in sensor systems and repair or replace equipment as required.

5.2.5.2.4. Monitor surveillance equipment operating performance levels.

5.2.5.2.5. Initiate and monitor associated test equipment to optimize performance of sensor systems.

5.2.5.2.6. During deployment or dispersed base operations, the ART will assist ground based personnel with maintenance activities when required or requested. When ground based maintenance personnel are not available, the ART is responsible for organizational level maintenance on the radar and IFF systems and their related subsystems utilizing the available technical data and RSP as applicable.

**5.3. Operational Procedures:**

5.3.1. **Aircraft Mission Systems History Log Book.** Maintain a history log book for each aircraft. Units will develop history log book procedures and ensure log books are readily available.

5.3.2. **Equipment Malfunctions.** The MCC, after coordination with the AC on equipment issues which affect aircraft systems, must approve continued operations of malfunctioning mission equip-

ment that would affect the mission. The MCC will evaluate the impact of using degraded equipment against the mission tasking and the inability to meet that tasking.

5.3.3. **Air Surveillance Procedures:**

5.3.3.1. **Coordination.** The ASO will coordinate with the SD and MCC to ensure all activity is conducted on an appropriate map. Coordinate Command and Control Coordinate System (CCCS) origin changes with the MCC and AMSS prior to taking the switch action.

5.3.3.2. **Briefings.** The ASO/ECO/SST will accomplish a surveillance briefing prior to assuming station, normally during mission planning. As a minimum, the briefing will include surveillance information, data link taskings, and individual task assignments.

5.3.3.3. **Sensor Management/Procedures.** Prior to assuming station, the ASO will perform sensor checks to determine the optimum radar/IFF settings for the mission. The ASO will brief the MCC on the results of the checks and the final radar setup. Sensor check procedures include:

5.3.3.3.1. **IFF Sensor Check.** Perform a systematic checkout of the IFF as soon as it becomes available. If equipment malfunctions or a previously unchecked R/T unit comes on line, the ASO will accomplish an additional check. As a minimum, the ASO will check:

5.3.3.3.1.1. **Maximum Range.** Measure the maximum range of the IFF by determining the range of an IFF sensor return with a consistent (three out of seven returns) data trail.

5.3.3.3.1.2. **IFF Jitter.** Check in all quadrants, as close as possible to, but not beyond 250 NM from the E-3. Measure jitter as sideways displacement of returns from a straight-line path. Normally, jitter up to 5 NM is acceptable.

5.3.3.3.1.3. **Quality.** The overall quality of the IFF will be determined by checking consistency of data trails, and when radar becomes available, the mileage difference between the IFF and radar sensor returns. Normally, within 2 NM is acceptable. Accomplish this check within a radius of 250 miles from the E-3.

5.3.3.3.1.4. **Mode IV Test.** Perform a mode IV loop test prior to declaring the IFF operational.

5.3.3.3.1.5. **Resolution of IFF Overloads.** The ASO will monitor the overload condition and make the necessary adjustments to minimize the loss of IFF data.

5.3.3.3.2. **Radar Sensor Check.** Time permitting, the ASO will check as many RF sets as possible, and select a primary and secondary RF set (preferably not in the same chain). A sensor quality check must be made when established in the orbit area if a checkout was made prior to arrival to the orbit area. The radar check will include:

5.3.3.3.2.1. **Doppler/Beyond the Horizon (BTH) Maximum Range.** Determine the maximum doppler range from the situation indicator display (SID) presentation using data trails with a minimum 40% blip-scan ratio (3 out of 7 scans have radar returns). Determine the maximum BTH range from the SID presentation.

5.3.3.3.2.2. **Quality.** Radar quality is determined by the percentage of all IFF returns within a 250 NM radius of the E-3 that have consistent discernible radar data trails. In addition, consider the overall consistency of the radar presentation. Use the following criteria to assess the overall quality of the radar:

5.3.3.3.2.2.1. Good. Greater than 50%

5.3.3.3.2.2.2. Fair. Between 30 to 50%

5.3.3.3.2.2.3. Poor. Less than 30%

5.3.3.3.2.3. **System Counts.** Log on applicable form; Doppler, BTH, and Mode 3 counts for comparison of radar frequencies. Time of day, operating location, traffic density areas, and radar mode of operation may significantly affect the ratio of these figures.

5.3.3.3.3. **Radar Setup.** The ASO must consider the effects of the E-3 flight parameters on sensor performance and attempt to optimize checkout within these constraints. The assessment of overall air picture quality will be the primary factor in determining the optimum RF set.

5.3.3.3.3.1. After selecting the optimum RF set, the ASO will declare the radar operational.

5.3.3.3.3.2. When multiple E-3 flights operate in an area, the ASO will perform frequency deconfliction as required.

5.3.3.3.3.3. The ECO will perform a systematic checkout of the Passive Detection System (PDS) and brief the ASO on the results of checks. If checkout is satisfactory, PDS will be declared operational.

5.3.3.4. **Assuming Station.** ASO will inform MCC of station assumption requirements not yet completed:

5.3.3.4.1. Conduct data base checks as appropriate.

5.3.3.4.2. IFF configured for mission use.

5.3.3.4.3. Configure the radar settings and optimize sensors for maximum detection while maintaining air-picture quality.

5.3.3.4.4. Track initiation on all data trails within the assigned AOR(s).

5.3.3.4.5. Initiate contact with ground control agencies.

5.3.3.4.6. Operational data links(s).

5.3.3.4.7. ESS placed in the mission mode, as required.

5.3.3.4.8. PDS Operational.

5.3.3.4.9. ASO must notify the MCC once all station assumption requirements are completed.

5.3.3.5. **Data Link Procedures and Operation.** Data link is the primary means of passing E-3 information. Establish data links according to JCS Pub 3-56.23 for TADIL-A and Air Force JTIDS Network Library for JTIDS during CONUS operations. Establish data link operations outside the CONUS, according to local theater directives.

5.3.3.6. **Voice Tell and Recording Procedures.** When the E-3 is in an environment with units not capable of data link interface, use the following voice tell and recording procedures:

5.3.3.6.1. The E-3 will voice tell priority one, two, and three tracks unless the receiving agency directs cease tell. Tell all other priorities on request only. For this purpose, the following priorities have been established:

5.3.3.6.1.1. **Priority One.** Hostile/Faker.

5.3.3.6.1.2. **Priority Two.** Unknown/Pending.

5.3.3.6.1.3. **Priority Three.** Emergencies.

5.3.3.6.1.4. **Priority Four.** Defensive Counter Air.

5.3.3.6.1.5. **Priority Five.** VIP Flights.

5.3.3.6.1.6. **Priority Six.** Special Missions.

5.3.3.6.1.7. **Priority Seven.** Other tracks as directed by the receiving agency, (for example, Neutralized Fakers). Live tracks have priority over simulated tracks.

5.3.3.6.2. Voice tell will normally be in United States Message Text Format (USMTF) TRKREP format. When it is impossible for the receiving agency to accept tell according to USMTF, use a format agreed upon by both agencies.

5.3.3.7. **Electronic Combat (EC) Procedures.** The ASO will monitor/coordinate Electronic Protection (EP) actions. Use the following procedures:

5.3.3.7.1. The ASO and ART will coordinate on any unusual sensor activity to determine whether the source is external or internal. If no explanation can be determined and the source is external, submit an Air Force Spectrum Interference Reporting System (AFSIRS) report.

5.3.3.7.2. Make every effort in an Electronic Attack (EA) environment to obtain active data on all EA targets. Whenever possible, use cooperative passive tracking. If cooperative support is not available, use self-passive tracking.

5.3.3.7.3. When self-triangulating, to determine if one of several previously active tracking returns is a suspected EA emitter, the AST will extrapolate the suspected track on its last known heading, speed and altitude, before initiating a passive track. If two tracks are used, the ASO will coordinate with the MCC and SD to ensure proper weapons commitment.

5.3.3.7.4. The ASO will keep the MCC and SD advised on status of passive tracks. When the ASO is confident that the passive track has correlated with the jammer's location, notify the SD that the track has "stabilized."

5.3.3.8. **Identification.** When the E-3 is granted ID authority, the ASO will use all available capabilities and resources to ID tracks within its AOR according to the theater ID instructions.

5.3.4. **Weapons Procedures:**

5.3.4.1. **Station Assumption.** Prior to assuming station, the SD will:

5.3.4.1.1. Contact FAA/Air Route Traffic Control Center (ARTCC) or ground monitor/control authority, as applicable.

5.3.4.1.2. Initiate and complete a sensor correlation check when the E-3 is scheduled to be a control facility. To ensure correct positioning of sensor data, the correlation procedures will be

reaccomplished periodically if mission computer or inertial navigation computer problems occur.

5.3.4.1.3. Check all weapons assigned radio frequencies for usability.

5.3.4.1.4. Check data base accuracy.

5.3.4.1.5. If ARTCC or ground monitor capability does not exist for the AOR, use a correlation check with a controlled aircraft position from a TACAN, if possible.

5.3.4.2. **On-Station Procedures.** Procedures will be according to the operational procedures contained in this instruction and specific mission directives.

5.3.4.3. **Off-Station Procedures.** The SD will compile controlled aircraft mission totals and furnish this data to the MCC. The SD will pass totals to the ground monitor if requested/directed.

5.3.4.4. **SD Control Procedures.** The SD may control aircraft during a mission after coordination with the MCC and when simultaneous missions are not in progress.

5.3.4.5. **Handoff Procedures.** Handoff procedures IAW applicable FAA Letters of Agreement. The SD or a designated WD will monitor the handoff frequency at all times when performing station assumption duties and while on station.

5.3.4.6. **Controlled Aircraft Emergency Procedures.** For aircraft with in-flight emergencies, the SD/WD performing the handoff will use the word "Emergency" at the beginning and ending of transmissions to the recovery agency. In the event of an emergency being declared by an aircraft under E-3 control, the WD will refer to their Aircrew Aids, "Controlled Aircraft Emergency Procedures".

5.3.4.7. **Control Procedures.** On-station control procedures will be IAW AFI 11-214, *Aircrew and Weapons Director Procedures for Air operations.*

5.3.4.8. **Airspace.** Use of airspace will be IAW Air Traffic Control Management/Airspace Control directives.

5.3.4.9. **Distressed Aircraft.** Report any suspected or triangular distress patterns to the SD.

5.3.4.10. **Symbology.** During all operations, WDs will ensure symbology and sensor data of controlled aircraft are within 2 NM of each other. Weapons pairings to Combat Air Patrol (CAP), air-to-air intercept, and ground targets are transmitted to net participants via data link.

5.3.5. **Communications:**

5.3.5.1. **Radio Procedures.** Adhere to communications discipline at all times. All crewmembers will use proper International Civil Aviation Organization (ICAO) phrases, phonetic alphabet, and R/T procedures outlined in ACP 121, US Sup 2 (*Communications Instructions, General-Air-Ground*).

5.3.5.2. **Priority of Message Transmissions.** The E-3 aircrew, while in flight, will transmit messages according to the following priority:

5.3.5.2.1. **Flight Safety.**

5.3.5.2.2. **Command and Control Information.**

5.3.5.2.3. **Flight Regularity.**

5.3.5.3. **Phone Patches.** Units will establish phone patch procedures in their local chapter.

5.3.5.4. **Dispersal Word/Base.** The CSO will obtain the dispersal word and base, and inform the AC/MCC during mission planning if applicable.

5.3.5.5. **Mode 2 IFF/SIF Procedures.** The CSO will obtain the Mode 2 code settings and Mode 4 key list when receipting for the classified documents. The CT will be responsible for inserting, verifying, and zeroizing the Mode 2 setting and Mode 4 as required by local procedures.

5.3.5.6. **Call Signs.** Always use the aircraft callsign when transmitting messages of Flight Safety, aircraft movement, and radio calls required by this instruction. Mission crewmembers will use the mission crew call sign when communicating with the respective controlling/monitoring agency, aircraft under their control, or as fragged/briefed. The CSO will brief crewmembers on call signs to use when providing alternate communications.

5.3.5.7. **UHF/VHF Guard Monitoring Procedures.** The MCC will ensure the mission crew monitors VHF and UHF guard frequencies. The MCC, SD, and WDs will have UHF guard receiver/transmitter programmed to their consoles. While aircraft are under control by the mission crew, the SD will designate at least one weapons crewmember to monitor UHF guard. The ASO, SST, and ASTs will have VHF guard programmed to their consoles. The ASO will designate at least one surveillance crewmember to monitor VHF guard while the E-3 is on station.

5.3.6. **Mission Crew Intercom Procedures:**

5.3.6.1. The primary means of coordination for the mission crew will be via the programmed mission nets.

5.3.6.1.1. Coordinate net assignments/deviations through the MCC.

5.3.6.1.2. Maintain strict net discipline. Limit conversation to operational matters.

5.3.6.2. Use the ADS selective intercom system for information that are of a unclassified, lengthy in nature, and/or person-to-person conversations.

5.3.6.3. The PA system is for use in emergencies and practice emergencies. Except for emergency checklist items, use of the PA by mission crew is restricted to the MCC.

5.3.7. **Special Interest Track Procedures:**

5.3.7.1. A special interest track is any track that requires priority handling by the mission crew.

5.3.7.2. The E-3 will not depart orbit or working area to continue monitoring the special interest track unless directed by the command authority exercising E-3 OPCON. Any instructions that are directive for the E-3 (i.e., leave/move orbit, changes in level of decentralization, etc.) will be authenticated by the MCC/BDT.

5.3.7.3. The MCC will:

5.3.7.3.1. Ensure the ASO assigns tracking responsibilities for the special interest track.

5.3.7.3.2. Ensure the SD monitors the special interest track for possible intercept actions.

5.3.7.3.3. Coordinate with the ASO and flight crew to maintain the special interest track within the E-3 surveillance limits (orbit location).

5.3.7.3.4. Coordinate E-3 airspace changes (orbit location) with the flight crew, as required.

5.3.7.4. The ASO will:

5.3.7.4.1. Give priority attention to the special interest track and assign it to an AST as a specific responsibility.

5.3.7.4.2. Ensure the AST places the track in debriefing status, logs the time, track number, and ID on the appropriate forms.

5.3.7.5. The SD will:

5.3.7.5.1. Monitor the progress of the special interest track and conduct any tactical action on the track as directed.

5.3.7.5.2. Scramble and/or direct aircraft for intercept as directed/necessary.

5.3.7.5.3. After the accomplishment of the intercept, inform the MCC/ground monitor facility of any required information.

5.3.7.5.4. Coordinate with the proper ground unit for recovery of the interceptors.

5.3.8. **Sensor Correlation:**

5.3.8.1. If control of aircraft is anticipated, accomplish a weapons correlation check prior to assuming station. If the E-3 mission is surveillance only, the surveillance section will perform the check with the appropriate automated/manual tell agency(ies).

5.3.8.2. Perform an IFF only correlation check if:

5.3.8.2.1. The ASO subsequently correlates IFF to radar sensor returns, or;

5.3.8.2.2. IFF only on-station operations are authorized according to this instruction and theater operating instructions.

5.3.8.3. When operating as an military radar unit (MRU) in CONUS, Alaska, or Hawaii, and control of aircraft is anticipated, correlation procedures will be according to FAA Handbook 7610.4H, *Special Military Operations*.

5.3.8.4. Coordinate procedures with the responsible MRU prior to assuming station when operating as an ARU.

5.3.8.5. When operating in Canada, the E-3 will comply with the DOT/DND agreement (short title, "AWACS Agreement") between Director General Air Doctrine and Operations Department National Defense, and Director Air Traffic Services Department of Transportation.

5.3.8.6. The following procedures apply to sensor correlation checks required by surveillance:

5.3.8.6.1. Minimum of two tracks within the ADIZ, preferably in a non-congested area.

5.3.8.6.2. Voice tell format will include the track number, coordinates, and Mode 3 squawk (if possible). Tracks used must be within 3 nautical miles, or less to be considered a good sensor correlation.

5.3.8.6.3. Successful data link correlation checks could be used instead of voice tell checks due to accurate real-time data being passed between both agencies.

5.3.9. **Mission Crew Commander Reports.** MCC will compile reports according to MCC Aircrew Aids.

MARVIN R. ESMOND, Lt General, USAF
DCS, Air and Space Operations

## Attachment 1

## GLOSSARY OF REFERENCES AND SUPPORTING INFORMATION

***References***

JCS Pub 3-56.23, (Tadil-A)

AFPD 11-2, *Aircraft Rules and Procedures*

AFPD 11-4, *Aviation Service*

AFI 11-202V3, *General Flight Rules*

AFI 11-214, *Aircrew and Weapons Director Procedures for Air Operations*

AFI 31-101, *The Air Force Physical Security Program*

AFI 33-360V1, *Publications Management Program*

AFI 37-160V8, *The Air Force Publications and Forms Management Program--Developing and Processing Forms*

AFMAN 11-217 *Instrument Flight Procedures*

ACCI 21-101, *Objective Wing Aircraft Maintenance* (superseded ACCI 21-166)

T.O. 1-1C-1-27, *E-3 Air Refueling Procedures With KC-135 and KC-10*

T.O. 1E-3A-1-1, *Flight Manual, USAF Series E3B and E3C Aircraft*

ACP 121, US Sup 2, *Communications Instructions, General-Air-Ground*

FAA Handbook 7610.4H, *Special Military Operations*

***Abbreviations and Acronyms***

**AACS—**Airborne Air Control Squadron

**AC—**Aircraft Commander (used interchangeably with Pilot)

**ACC—**Air Combat Command

**ACE—**Airborne Command Element

**ACG—**Air Control Group

**ADIZ—**Air Defense Identification Zone

**ADS—**Audio Distribution System

**AFA—**Air Force Academy

**AFB—**Air Force Base

**AFORMS—**Air Force Operational Resources Management Systems

**AFRC—**Air Force Reserve Command

**AFROTC—**Air Force Reserve Officer Training Corps

**AFTO—**Air Force Technical Order

**AGL—**Above Ground Level

**AOC—**Air Operations Center

**AOO—**Area of Operation

**AOR—**Area of Responsibility

**A/R—**Air to Air Refueling

**ARCP—**Air Refueling Control Point

**ARIP—**Air Refueling Initial Point

**ART—**Airborne Radar Systems Technician

**ARTCC—**Air Route Traffic Control Center

**ASO—**Air Surveillance Operator

**ASOC—**Air Support Operations Center

**AST—**Air Surveillance Technician

**ATC—**Air Traffic Control

**AWACS—**Airborne Warning and Control System

**BDT—**Battle Director Technician

**BTH—**Beyond the Horizon

**CAP—**Combat Air Patrol

**CAMS—**Computer Automated Maintenance System (CAMS)

**CC—**Commander

**CD—**Counterdrug

**CDMT—**Computer Display Maintenance Technician

**CFG—**Communications Functional Group

**CINC—**Commander in Chief

**COG (CG)—**Center of Gravity

**CMR—**Combat Mission Ready

**CONUS—**Continental United States

**CP—**Copilot

**CPS/DMP—**Control Power Supply/Diagnostic Maintenance Program

**CRC—**Control and Reporting Center

**CSC—**Central Security Control

**CSG—**Computer Support Group

**CSO—**Communications Systems Operator

**CT—**Communications Technician or Continuation Training

**DETCO—**Detachment Commander

**DH—**Decision Height

**DO—**Director of Operations

**DR—**Dead Reckoning

**DRU—**Direct Reporting Unit

**DV—**Distinguished Visitor

**EA/EP—**Electronic Attack/Electronic Protect

**EC—**Electronic Combat

**ECO—**Electronic Combat Officer

**EMI—**Electro-Magnetic Interference

**EOB—**Electronic Order of Battle

**EPR—**Exhaust Pressure Ratio

**ES—**Electronic Support

**ESM—**Electronic Support Measures

**ESS—**Electronic Support System

**ETA—**Estimated Time of Arrival

**ETD—**Estimated Time of Departure

**FAA—**Federal Aviation Administration

**FAF—**Final Approach Fix

**FCT—**Flight Crew Training

**FE—**Flight Engineer

**FL—**Flight Level

**FLIP—**Flight Information Publications

**FOA—**Field Operating Agency

**FOD—**Foreign Object Damage

**FPM—**Feet Per Minute

**GPS—**Global Positioning System

**HAT—**Height Above Touchdown

**HF—**High Frequency

**IAW—**In Accordance With

**ICAO—**International Civil Aviation Organization

**ID—**Identification

**IFF—**Identification, Friend or Foe

**IFR—**Instrument Flight Rules

**IMC—**Instrument Meteorological Conditions

**INS—**Inertial Navigation System

**IP—**Instructor Pilot (an ""I"" prefix designates an instructor in that crew position, e.g.; IMCC)

**JCS—**Joint Chiefs of Staff

**JFACC—**Joint Force Air Component Commander

**JTIDS—**Joint Tactical Information Distribution System

**LAT—**Latitude

**LONG—**Longitude

**LOP—**Line of Position

**MAC—**Mean Aerodynamic Chord

**MAJCOM—**Major Command

**MARSA—**Military Assumes Responsibility for Separation of Aircraft

**MCC—**Mission Crew Commander

**MDA—**Minimum Descent Altitude

**MEL—**Minimum Equipment List

**MET—**Mission End Time (AFRC only)

**MRU—**Military Radar Unit

**MSL—**Mean Sea Level

**NABC—**NORAD Airborne Battle Commander

**Nav—**Navigator

**NCS—**Navigational Computer System

**NM—**Nautical Mile

**NORAD—**North American Air Defense

**NWRO—**NORAD Weapons Resource Officer

**OG—**Operations Group

**ONC—**Operational Navigation Chart

**OPCON—**Operational Control

**OPLAN—**Operations Plan

**OPORD—**Operations Order

**ORC—**Operations Readiness Center

**PA—**Public Address

**P-Sortie—**Proficiency Sortie

**PDS—**Passive Detection System

**PACAF—**Pacific Air Force

**RCR—**Runway Condition Reading

**RF—**Radar Frequency

**RNAV—**Area Navigation

**ROE—**Rules of Engagement

**RSC—**Runway Surface Condition

**RSP—**Readiness Spares Package

**R/T—**Radio/Telephone

**SD—**Senior Director or Situational Display

**SEFE—**Standardization/Evaluation Flight Examiner

**SID—**Standard Instrument Departure or Situation Indicator Display

**SIF—**Selective Identification Feature

**Sim—**Simulator

**SM—**Statute Mile

**SOF—**Supervisor of Flying

**SPINS—**Special Instructions

**SRT—**Scheduled Return Time (AFRC only)

**SST—**Senior Surveillance Technician

**STAR—**Standard Arrival Route

**TACAN—**Tactical Air Navigation

**TACON—**Tactical Control

**TACS—**Tactical Air Control System

**TD—**Tabular Display

**TOLD—**Take-Off and Landing Data

**TRT—**Take-Off Rated Thrust

**UHF—**Ultra-High Frequency

**USMTF—**United States Message Text Format

**USB—**Upper Side Band

**VDP—**Visual Descent Point

**VFR—**Visual Flight Rules

**VHF—**Very High Frequency

**VIP—**Very Important Person

**WD—**Weapons Director

***Terms***

**Aircrew—**Use this term to describe the complete complement of personnel required to fly an operational mission. It composes both the flight crew and the mission crew.

**Flight Crew—**The flight crew is responsible for the safe ground and flight operations of the E-3 aircraft. It consists of Aircraft Commander (AC), Copilot (CP), Navigator (Nav), and Flight Engineer (FE). For purposes of this instruction, Flight Crew Training (FCT) personnel are considered flight crew members; however, contractor personnel will not occupy primary E-3 crew positions during critical phases of flight.

**Mission Crew—**The mission crew consists of those individuals responsible for the command, control, surveillance, communications/electronic, and management functions, to include the control and monitoring of assigned aircraft, sensor management, internal and external communications management for mission operations, and onboard systems maintenance. It consists of the Mission Crew Commander (MCC), Senior Director (SD), Weapons Director(s) (WD), Air Surveillance Officer (ASO), Electronic Combat Officer (ECO), Senior Surveillance Technician (SST), Air Surveillance Technician(s) (AST), Computer Display Maintenance Technician (CDMT), Airborne Radar Technician (ART), Communications Systems Operator (CSO), and the Communications Technician (CT).

**NORAD Battle Staff—**The battle staff assists the crew performing aerial operations within the NORAD area of operations (AOO). The battle staff is responsible to manage the air battle and carry out the required command and control functions. It has the responsibility and authority, as directed by the appropriate commander, to ensure the most effective use of assigned resources to accomplish the mission. The Battle Director Technician(s) (BDT) are ACC/PACAF E-3 crewmembers specifically trained to support the NORAD mission. Supported commanders may also provide a NORAD Airborne Battle Commander (NABC) and NORAD Weapons Resource Officer (NWRO). PACAF/AFRC E-3 crewmembers will be trained and certified by local procedures using a command approved syllabus.

**Instructor/Standardization Evaluation Flight Examiner (SEFE) Supervision—**Instructor/SEFE supervision requires an instructor/SEFE who is qualified and current in the position and the maneuver that will be performed. Individuals not qualified or current in the aircraft, require instructor/SEFE supervision for the activity in which they are unqualified or noncurrent. For unqualified or noncurrent pilots, IP/SEFE supervision requires the IP/SEFE to be in one of the pilot's seats with immediate access to the controls while the maneuver is being performed. For all other crewmembers, instructor/SEFE supervision requires over-the-shoulder observation of the unqualified/non-current crewmember. During critical phases of flight, flight crew instructors/SEFEs are allowed to stand, all others will be at the discretion of the pilot-in-command.

**Critical Phases of Flight—**Critical phases of flight are takeoff, air refueling, any type of landing approach, landing, and any other maneuver listed in this instruction requiring IP/SEFE supervision.

**Operational Control (OPCON)—**Transferable command authority that may be exercised by commanders at any echelon at or below the level of combatant command. Operational control is inherent in combatant capability (command authority). Operational control may be delegated and is the authority to perform those functions of command over subordinate forces involving organizing and employing commands and forces, assigning tasks, designating objectives, and giving authoritative direction necessary to accomplish the mission. Operational control includes authoritative direction over all aspects of military operations and joint training necessary to accomplish missions assigned to the command. Operational control should be exercised through the commanders of subordinate organizations. Normally this authority is exercised through subordinate joint force commanders and Service and/or functional component commanders. Operational control normally provides full authority to organize commands and forces and to employ those forces as the commander in operational control considers necessary to accomplish assigned missions. Operational control does not, in and of itself include authoritative direction for logistics or matters of administration, discipline, internal organization, or unit training.

**Tactical Control (TACON)—**Command authority over assigned or attached forces or commands, or military capability or forces made available for tasking, that is limited to the detailed and, usually, local direction and control of movements or maneuvers necessary to accomplish missions or tasks assigned. Tactical control is inherent in operational control. Tactical control may be delegated to, and exercised at any level at or below the level of combatant command.

**Operations Readiness Center (ORC)—**The office responsible for, but not limited to publishing flight crew orders, flight and mission crew kits, and tracking the squadron's aircraft locations.

**Mission End Time (MET)—**(AFRC only) The scheduled day and time a flight crew is planned to return to home station from an exercise or deployment. The MET will be published in the monthly Operations Plan, rotation schedule, flying schedule, and/or operations order (OPORD), as necessary. The MET is the baseline for computing Scheduled Return Time.

**Scheduled Return Time (SRT)—**(AFRC only) A force management tool used by the on-scene commander to assure return of the Reserve associate personnel to home station before the expiration of their active duty orders. The SRT is calculated MET plus 24 hours.

**Transition—**Practice multiple takeoffs, simulated emergency patterns, low approaches and touch and go landings. Transition timing begins when the aircraft crosses the threshold on the first approach.

## Attachment 2

## E-3 BAGGAGE AND EQUIPMENT LOADING

**A2.1. Flight Engineer Responsibilities:**

A2.1.1. Verify an AFTO Form 781A entry was made when emergency readiness spares (ERS) kits are loaded.

A2.1.2. Ensure the removal of the forward two metal boxes of the ERS kits after arrival at a TDY location, if the stay will be longer than 3 days.

A2.1.3. Ensure only enough cleaning supplies are stored in the galley compartment to clean the area for one mission. Store the remaining cleaning supplies and all onboard bench stock in the dedicated crew chief box in the aft lower lobe.

**A2.2. Loading Procedures.** The following loading procedures apply to all E-3 operations. For more specific guidelines, refer to the following T.O.s: 1E-3A-1, 1E-3A-5-1, 1E-3A-5-2, and 1E-3A-2-7.

A2.2.1. **ERS Kits.** An ERS kit consists of as many as five metal boxes and one fiberglass box containing an inertial navigation unit (INU). If maintenance requires ERS kits, install the five metal boxes in the forward lower lobe using the rail system described in T.O. 1E-3A-2-7. Any other method of securing the metal boxes in the forward lower lobe is not acceptable. Secure the INU in the "J" compartment with cargo straps. Weight of ERS kits vary. The actual weight is annotated on each box. The crew chief will be responsible for recording the weights of each box and its location with an AFTO Form 781A entry. For mission planning purposes, use the standard weight of 650 pounds in the forward lower lobe and 127 pounds in "J" compartment. Make adjustments on DD Form 365-4 as necessary. After arrival at a TDY location, if the stay will be longer than 3 days, remove at least the forward two metal ERS kit boxes from the aircraft to allow for better access to the area for firefighting, etc, if the location has a means of securing the kits.

A2.2.2. **Technical Orders.** Carry one case of T.O.s when an ERS kit is loaded. Store in the "J" compartment and secure with cargo straps.

A2.2.3. **Tool Box:**

A2.2.3.1. Secure the inflight tool box/multimeter carried by the CT to the E-22 cabinet (less ESM) using shielded cable, with all excessive slack removed, or in "J" compartment with cargo straps. In 30/35 modified aircraft, the tool box will be secured in the "T" compartment.

A2.2.3.2. When a crew chief tool box is required, secure it at the tiedown point in the aft lower lobe or in "J" compartment with cargo straps.

A2.2.4. **FFT/Spectrum Analyzer.** When carried, secure the FFT and/or spectrum analyzer in "J" compartment using cargo straps.

A2.2.5. **Crew Baggage.** In order to facilitate loading, crewmembers and PAX will maximize the use of soft luggage (i.e., issued B-4, A-3, and hang-up bags) for exercises and deployments. Crewmembers should be aware that proper aircraft/loading requires strapping the load down tightly in order to prevent load shifting. Crewmembers are normally allowed a baggage limit of 25 pounds on short term TDYs (7 days or less) and 66 pounds on longer deployments. However, if on mission planning day, weight appears to be critical, the AC and FE will determine the maximum allowable baggage weight

and inform crewmembers and passengers of how much they will be allowed to carry. Baggage will be secured at a height no higher than 40 inches in "J" compartment. Small, carry-on type baggage may be stacked higher that 40 inches provided they are secured at or below 40 inches.

A2.2.6. **Jackets and Garment Bags.** Jackets and lightweight garment bags may be stored on the clothing rack next to the lavatory.

A2.2.7. **SF6.** Up to four additional SF6 bottles, empty or full, may be stored in the aft lower lobe. Bottles will be secured in the SF6 storage racks, if the aircraft is modified. If not modified, use cargo straps, and up to four small bottles can be stored.

A2.2.8. **RMA Kits.** Store RMA kits in the area under the DDI at seat 8.

A2.2.9. **Additional Baggage/Equipment.** "J" compartment loading will be accomplished IAW T.O. 1E-3A-5-2.

A2.2.10. **General:**

A2.2.10.1. Mission crewmembers should store professional gear (i.e., pubs/helmet bag) either in "J" compartment or at their individual consoles in a manner that will minimize movement of gear.

A2.2.10.2. Compartment weight limitations will be in accordance with T.O. 1E-3A-1.

A2.2.10.3. Crew bunks will only be used for storing pillows and blankets which will be secured by seatbelts. Nothing will be stored beneath the bunks. Floor rings used to secure bunks to the floor will not be used for luggage/equipment tiedown.

## Attachment 3

## FORMATION BRIEFING GUIDE

**A3.1. Ground Operations:**

A3.1.1. Check-in procedures.

A3.1.2. ATC clearance.

A3.1.3. Engine start.

A3.1.4. Taxi procedures.

**A3.2. Takeoff:**

A3.2.1. Performance data.

A3.2.2. Interval.

A3.2.3. Emergency procedures/sympathetic abort.

**A3.3. Departure:**

A3.3.1. Routing.

A3.3.2. Airspeed/mach number.

A3.3.3. Intermediate level off.

A3.3.4. Power settings.

A3.3.5. Turns/angle of bank.

A3.3.6. AN/APX-78.

**A3.4. Level Off:**

A3.4.1. Altitude.

A3.4.2. Airspeed/mach number.

**A3.5. Enroute:**

A3.5.1. Airspeed changes.

A3.5.2. Angle of bank.

A3.5.3. Climbs/descents.

A3.5.4. Position changes.

**A3.6. Air Refueling:**

A3.6.1. Call signs.

A3.6.2. Track (altitudes, A/R frequencies, common A/A TACAN, Beacon setting).

A3.6.3. Priority (sequence/onloads).

A3.6.4. Rendezvous procedures (normal, overrun, breakaway).

A3.6.5. Air refueling formation (altitudes/spacing/turns into echelon).

A3.6.6. Bingo fuel.

A3.6.7. Abort point/base.

A3.6.8. End A/R plans.

**A3.7. Orbit:**

A3.7.1. Altitudes.

A3.7.2. Orbit pattern.

**A3.8. Recovery:**

A3.8.1. Breakup point.

A3.8.2. Airspeeds for increased spacing.

A3.8.3. Type penetration/approach.

**A3.9. Special Subjects:**

A3.9.1. Lost wingman.

A3.9.2. Radio discipline.

A3.9.3. Debriefing (time and place).

A3.9.4. NOTAMs.

**A3.10. Questions and Remarks:**

## Attachment 4

## E-3 PASSENGER BRIEFING GUIDE

**A4.1. Required Briefing Items.** The following items are required briefing items unless individuals have been previously briefed during the pre-mission briefing:

A4.1.1. AC/MCC names.

A4.1.2. ETA to destination.

A4.1.3. Cruise altitudes.

A4.1.4. Weather enroute and at destination.

A4.1.5. Passenger on/off-load procedures.

**A4.2. Emergency Signals:**

A4.2.1. Ground Evacuation:

A4.2.1.1. Signal for evacuation.

A4.2.1.2. Primary/secondary exits.

A4.2.1.3. Escape slides.

A4.2.1.4. Assembly area.

A4.2.2. Crash Landing/Ditching:

A4.2.2.1. Signal for preparation.

A4.2.2.2. Signal to brace for impact.

A4.2.2.3. Brace position.

A4.2.3. Loss of Pressure:

A4.2.3.1. Signal.

A4.2.3.2. Oxygen requirements.

**A4.3. Oxygen/Survival Equipment:**

A4.3.1. How to check/use assigned oxygen source.

A4.3.2. LPU--fitting and use (if applicable).

A4.3.3. Survival suit--use (if applicable).

**A4.4. Restrictions:**

A4.4.1. Reading lights.

A4.4.2. Lavatory.

A4.4.3. Seat belts.

A4.4.4. Bunks.

A4.4.5. Smoking and smokeless tobacco are prohibited.

A4.4.6. Operation of electric/electronic devices (except watches, hand held non-print calculators, hearing aids, medically prescribed physiological instrumentation, and portable voice recorders when approved by MAJCOM) will be IAW AFI 11-202V3. Electronic flash attachments will not be used.

A4.4.7. Transportation or use of narcotics, marijuana, or other dangerous drugs is prohibited unless approved by proper medical/legal authority.

A4.4.8. Explosive, flammable and corrosive materials, or materials with toxic or irritating fumes are prohibited unless approved by competent authority.

**A4.5. Galley Area:**

A4.5.1. Restrictions during refueling.

A4.5.2. Oven use.

A4.5.3. Coffee.

A4.5.4. Water.

A4.5.5. Flight lunches.

A4.5.6. Noise.

**A4.6. Miscellaneous:**

A4.6.1. Follow E-3 crewmember instructions at all times.

A4.6.2. Ensure passengers are thoroughly briefed prior to starting any emergency drill.